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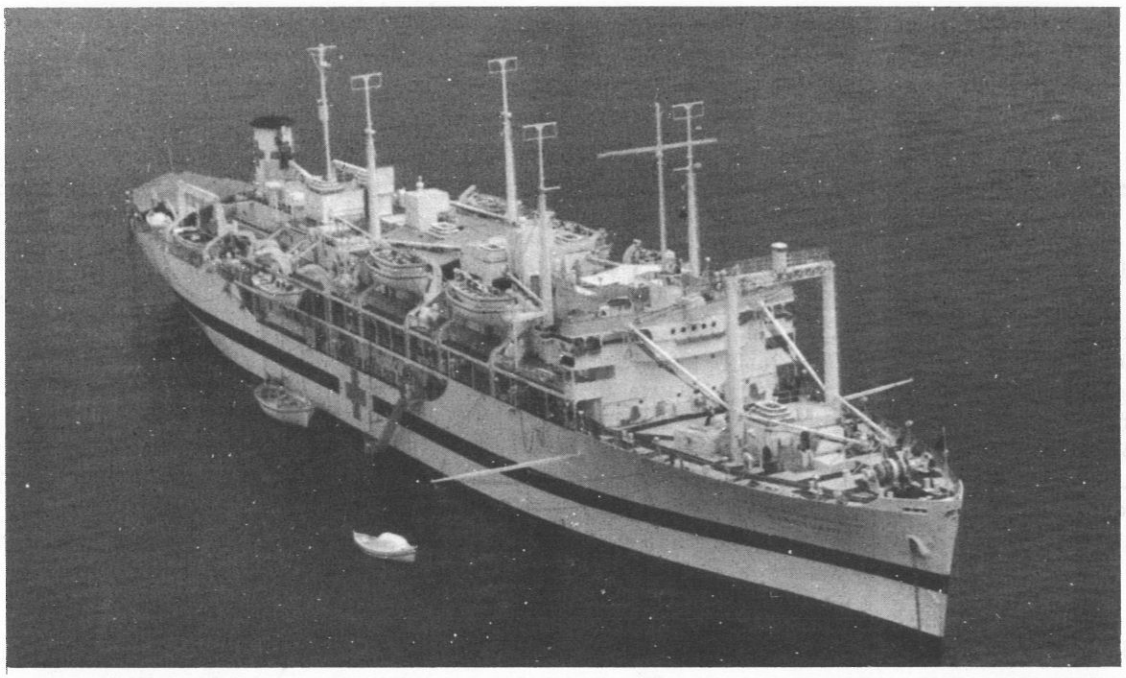

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article, in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to Editor: Bureau of Medicine and Surgery, Navy Department, Washington, D.C. 20390 (Code 18), giving full name, rank, corps, and old and new addresses.

FRONT COVER: USS SANCTUARY (AH–17). The USS Naval Hospital Ship SANCTUARY, later named "USS HEAVEN NUMBER SIX" by liberated Prisoners-of-War evacuated from Wakayama, Japan, was converted by the Todd Ship Building Company, Hoboken, New Jersey, from a C–4 hull built by the Sun Ship Building Company, Chester, Pennsylvania. Funds to pay for the construction of the SANCTUARY were raised by the purchase of 7th Liberty War Bonds by citizens of Hoboken, New Jersey. The vessel was placed in commission in the Brooklyn Navy Yard, Brooklyn, New York, on 20 June 1945 by CDR H. J. Sasse, Acting Captain at the Navy Yard, and was placed under the command of CDR. J. M. Paullson (DM), USNR, who was later taken seriously ill and hospitalized while the vessel was on her shake-down cruise. (See "Special Article" in this issue).

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

SPECIAL ARTICLE

HISTORY OF THE USS SANCTUARY (AH–17)

By CDR Wm. Van C. Brandt, USNR.

The SANCTUARY sailed from Norfolk, Virginia, 31 July 1945, under command of CDR Wm. Van C. Brandt (D), USNR, #25186. She arrived at the Panama Canal 5 August 1945. On arrival at Balboa, orders were received to proceed 9 August 1945 to Pearl Harbor for further routing.

While at sea 15 August 1945, enroute to Pearl Harbor word was received by radio of the Japanese Government's unconditional surrender, and while this meant the end of the fighting for combatant ships, whose guns were silenced, it meant only the beginning of duty for this "Great White Ship of Mercy" enroute to the far Western Pacific on a "MISSION OF MERCY."

Arriving in Pearl Harbor, 19 August 1945, a two-day availability was granted for liberty and recreation which was enjoyed by all hands. Leaving Pearl Harbor under orders on 22 August 1945 for Okinawa, permission was given the SANCTUARY to exceed the established 16 knots speed limit on the Pacific. She therefore cruised direct to Okinawa, Japan, at the speed of 17.5 knots arriving at Okinawa on 3 September 1945, completing an 11,343 mile cruise without a breakdown and in a 4.0 condition and ready for sea.

Upon arrival at Okinawa, the Commanding Officer, CDR Wm. Van C. Brandt, USNR, reported immediately to ADM Raymond A. Spruance, Commander 5th Fleet, and was immediately assigned to Task Force 56, under the command of VADM J. D. Olendorf, USN. At the time of the SANCTUARY's arrival and in accordance with plans already prepared for the invasion of Southern Japan, the SANCTUARY was assigned as a unit of the first invasion and evacuation force, Task Force 56.5.2 under RADM R. S. Riggs USN. This force left Okinawa 9 September 1945 for Wakayama, Japan, to make a landing, establish a beachhead, and to evacuate liberated Prisoners-of-War which the Japanese Government agreed to deliver to us at Wakayama, Japan.

The Task Force arrived at Wakayama, Japan, Tuesday, 11 September 1945, and laid off the bay until our mine sweepers could clear a channel through Japanese minefields. This being accomplished late in the afternoon, the Task Force led by the Group Commander, ADM Riggs, in the USS MONTPELLIER entered the bay and arrived off Wakayama about 1930, 11 September 1945.

The beachhead was immediately established on 12 September 1945 and evacuation forces were set up for the reception of Prisoners-of-War, who began to arrive at Wakayama on the morning of 13 September 1945.

The Task Group Commander selected the SANCTUARY as the first ship to be loaded, and the small landing boats started bringing out the sick and injured and ambulatory liberated prisoners about noon on 13 September 1945. At the beachhead they were interviewed, bathed, decontaminated, fed, and given new clothing by the beach party ashore before being sent out to the ships.

The normal capacity of the SANCTUARY was 786, as this is the number of bunks she has in her air-conditioned wards, and all the wards were filled by 0300 on the 14th of September 1945. As more prisoners were available and landing boats kept coming to the side of the ship, the Commanding Officer appealed to the fleet over the voice radio phone for cots. Obtaining 400, these were set up on the bridge deck, on the fantail, on the weather deck, and in the passageways, and as boat after boatload of ex-Prisoners-of-War reached the ship, those who did not require hospitalization were given cots. Finally a total of 1,139 were taken aboard.

These men were mostly English, Australians, and Javanese, who had been captured at the fall of Singapore, Hongkong, and the Battles of Java. They had been in Japanese prison camps for three and one-half years. Finally at 1000 on the morning of 14 September 1945 there being no additional Prisoners-

of-War available, the Task Force Commander gave orders to the SANCTUARY to proceed to Okinawa to discharge her passengers and there make all possible speed to Nagasaki, where thousands of other Prisoners-of-War were being congregated.

On the loading of the Prisoners-of-War the SANCTUARY's officers, hospital corpsmen, nurses, and crew had worked untiringly, hour after hour and continuously from noon of 13 September, throughout the night and the morning of 14 September. The Task Group Commander, RADM Riggs was very much pleased with the progress, and as the Commanding Officer, in accordance with his orders, weighed anchor and got the SANCTUARY underway, over the blinker came the message: "From MONTPELLIER to SANCTUARY, message for Captain, Thanks for a good job 'WELL DONE,' signed Riggs." Only a Navy man can appreciate the significance of those few words "WELL DONE," and they were such as to inspire the whole crew of the good ship SANCTUARY.

As the SANCTUARY steamed slowly out of Wakayama's Harbor, she met coming in the flagship of the 5th Fleet, the USS NEW JERSEY, carrying the 4-star flag of ADM Raymond A. Spruance, USN, Commander of the US 5th Fleet. With her was the Admiral's escort of destroyers, cruisers, and aircraft carriers. In accordance with Navy practice, the Commanding Officer of the SANCTUARY, upon coming within signaling distance, immediately signaled the flagship for: "Permission to proceed on duty assigned." Back came "Affirm," and then, from the flagship came a blast of the bugle and in an instant her rails were manned from bow to stern and each man snapped to the Right Hand Salute. Instantly, the crew and all liberated Prisoners-of-War aboard the SANCTUARY who were able to stand, came to attention and Right Hand Salute, and, then, across the water, there came from that mighty battleship three rousing cheers. The crew of the SANCTUARY immediately returned them and then down the line as the SANCTUARY steamed slowly by one after another of the escort ships, they each one followed the example of the flagship, manned their rails and cheered:—"A Tribute From Fighting Sailormen of a Fighting Fleet" to a "Mercy Ship" on a "Mission of Mercy."

It was while on her way from Wakayama with her precious cargo of men who had known the horrors of a living hell that one of these poor unfortunates was heard to remark, "I never knew that there was a ship like this in all the world." When he was told that there were six of them, he asked their names, and when told CONSOLATION, REPOSE, SANCTUARY, etc., and that the SANCTUARY was the sixth one of the group, he remarked, "The Navy should not have named these ships by those names; they should have named them 'HEAVEN NUMBER ONE, NUMBER TWO, NUMBER THREE,' etc." And so the SANCTUARY, being the last one and Number Six on the list, should in the opinion of this liberated prisoner be ever afterward known as "HEAVEN NUMBER SIX."

While en route to Okinawa and within 300 miles of the destination, a typhoon warning was received. The course was immediately changed to evade it, but winds of 40 to 45 knots and heavy seas were encountered, which, considering the passengers aboard, caused the Commanding Officer considerable concern. However, port was finally made after a delay of 48 hours, and all passengers aboard delivered safely into the hands of the Army at Naha on the West Coast of Okinawa Islands.

While unloading, orders were received from the Task Force Commander, VADM J. B. Olendorf, Commander Task Force 56, to expedite unloading all possible and proceed to Nagasaki. Given a destroyer, USS MURPHY, as escort, the SANCTUARY at full speed cruised to Nagasaki, arriving on 22 September 1945. The loading of liberated prisoners from the USS HAVEN immediately began. While this loading was going on with one-half of the crew working, the other half of the crew was loaded into trucks which the Commanding Officer obtained, and were driven through the devastated area of Nagasaki, where they had an opportunity to see at first hand the devastation and destruction of the second atomic bomb. The port watch was given a similar opportunity to make this tour. Next day, 24 September 1945, loading had been completed and all Prisoners-of-War available, as well as all men from the local fleet eligible for release under Alnav 252–45, being taken aboard, the SANCTUARY with escort, the USS MURPHY, set sail once again for Naha, at which point the liberated prisoners were discharged into the care of the Army. The ambulatory prisoners were taken to the USS BINGHAM for further transportation to Manila.

Following the unloading and returning to Buckner Bay for fuel and supplies and to await further orders, a typhoon warning was received and at a conference of all Task Group Commanders, RADM Struble, SOPA, ordered all ships from Buckner Bay on a typhoon sortie. The SANCTUARY left Buckner Bay in group four of 54 ships and for the next three days was cruising about to the south of Okinawa

and riding the typhoon. While on this cruise, a message was received from the Commander of the 5th Fleet, "Report by dispatch to COMSERVPAC for Magic Carpet Duty, etc.," to which the Commanding Officer replied: "The SANCTUARY reports for duty. Now at sea Latitude 25.44 N, Longitude 126.38, course 270, speed 10. On typhoon sortie from Buckner Bay." By a later dispatch the SANCTUARY was ordered to return to Okinawa and load passengers and ramps for San Francisco.

In accordance with these orders, on her return to Okinawa there was transferred to the SANCTUARY 454 civilian repatriates from the USS REFUGE. These had been liberated from the civilian internment camps of Shanghai, China. These included men, women, and forty children under ten years of age; and it is with these *the first shipload of repatriates liberated by the Japanese at Shanghai, China,* plus 260 ex-American servicemen and ramps loaded at Okinawa and Guam, that the SANCTUARY is now en route to San Francisco.

So thus, the USS SANCTUARY, a Navy ship without a gun, a Great White Ship of Mercy, in her brief career of approximately four months has traveled the lanes of the South Atlantic, Caribbean, Eastern, Central, and Far Western Pacific Oceans; she has brought a great measure of happiness to thousands of men as well as hundreds of women and children who are now enjoying their passage home to their native land, which many of them have not seen for years. She has, in addition, been able to administer to the sick, wounded, and even the dying, and to those who have been privileged to enjoy the comforts of her spacious wards, she will long be remembered as THE GOOD SANCTUARY—"USS HEAVEN NUMBER SIX."

SANCTUARY was decommissioned and placed in reserve at Philadelphia on 15 August 1946. She had received the Navy Occupation Service Medal.

It is presently planned to take the USS SANCTUARY out of reserve and recommission her during this year.

CHLORPROMAZINE-INDUCED EMPHYSEMA*

RESULTS OF AN INITIAL STUDY IN THE HORSE

*Richard F. McLaughlin, Jr., Walter S. Tyler, Donald W. Edwards,** Gerald L. Crenshaw, Robert O. Canada, Murray A. Fowler, Edward A. Parker, and George H. Reifenstein.* *Amer Rev Resp Dis 92(4): 597–608, October 1965.*

Introduction

The present study is part of an investigative project designed to classify chronic pulmonary emphysema in the human being. In order to accomplish this, a precise knowledge of the etiology and pathogenesis of emphysema is required. Progress has been hampered because the initial lesion is either destroyed or obscured by the time the disease is subject to diagnosis. Clear descriptions of the transition in the lungs from normal to incipient emphysema are lacking. Clinical studies of patients with well-established emphysema, as well as related physiologic and pathologic studies, have been unrewarding so far and, of themselves, may never be capable of shedding light on the subject.

Numerous theories of etiology and pathogenesis have been proposed. None, however, has been proved by the experimental method. Nevertheless, several appear to be reasonably consistent with the observed phenomena. Prominent are those theories dealing with airway obstruction, autoimmune mechanisms, and primary bronchial-arterial disease. In addition, it is possible that emphysema is a common syndrome resulting from a variety of appropriate stresses or essential combinations thereof. Successful experimental production of the disease, therefore, would be of importance in evaluating these hypotheses.

In studies of this nature, it would seem logical to select an animal having a lung anatomically similar to that of man and, in addition, one that is naturally subject to the disease in a form similar to that occurring in man. This apparently has not been considered important in the past. However, the known

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interspecies anatomic differences, which at times can be marked, and the known interspecies differences in susceptibility to disease lend support to this concept and, indeed, could cause the failure of any experiment which neglects them. The horse, which has lungs anatomically similar to those of man, an alveolar distribution of the bronchial arteries as seen in man, as well as lungs subject to naturally occurring emphysema in a form similar to that in human beings, was therefore selected as a more appropriate experimental subject.

The theory currently under investigation by the writers deals with the possibility that emphysema occurs as a result of various disturbances in the bronchial arterial supply to the lungs. The controversial aspects of this theory have been thoroughly discussed in the past. However, the finding of a direct alveolar distribution of the bronchial arteries in both normal equine and human lungs implies a nutrient function at this level, and lends indirect support to the possibility that degenerative changes similar to those found in chronic pulmonary emphysema may result from alterations in the lung. Cudkowicz and Armstrong found widespread obliteration of the bronchial arteries in emphysematous human lungs. Crenshaw published similar observations. Nakamura and associates measured bronchial-arterial blood flow in emphysematous human beings. No significant increase was seen except in one case, but a marked increase was observed in patients with a variety of other pulmonary diseases. In contrast, using Vinylite-corrosion-cast techniques, Liebow noted an increased bronchial-arterial supply in emphysema. Corrosion casts were made of several emphysematous lungs. In the majority of these lungs, other complicating lesions large enough to be seen grossly were described, which, in themselves, might conceivably induce an expansion of bronchial-arterial supply. In two lungs, no such lesions were present, but the condition of the bronchial arteries was not described. Nakamura and associates emphasized the fact that the pathologic processes in emphysema are not always uniform, but are complicated by atelectasis, bronchiectatic changes, infection, et cetera, so that the reaction of the bronchial arteries in emphysematous lungs is variable, depending upon these complications. The present writers have made subgross, thin-slice, multicolored, latex-injection studies of seven emphysematous human lungs. In none of these was an expanded bronchial-arterial supply found. Past experiments, dealing with occlusion of the canine bronchial artery, resulted only in severe airway necrosis; but the bronchial artery is not distributed to the alveoli of this animal as it is in the horse and in man.

The purpose of this paper is to describe the results of injecting a necrotizing agent into the proximal bronchial artery of living horses as a means of producing chronic pulmonary emphysema.

General Background and Plan of Investigation

It was determined, by prior investigation in dogs, that permanent occlusion of the bronchial artery might be accomplished by the use of intra-arterial chlorpromazine (Thorazine®). Walton and McCord found that this drug, injected intra-arterially, regularly produces a severe, necrotizing, obliterative endarteritis and intense gangrene. Among other things, chlorpromazine is an anti-oxidant and possibly exerts its effects through inactivation of oxidative enzymes.

Canada found that the drug interferes with oxygen uptake when added to living liver tissue in a Warburg apparatus. As its concentration is increased, oxygen consumption progressively decreases in a straight line to zero. By injecting the drug intra-arterially in rabbits, Canada further determined that this effect is related to the concentration of the drug in the vessel at the time of injection and not to total dosage. Similar effects do not occur elsewhere after the first circulation of the drug, nor do they occur above the point of injection. Dilutions of stock parenteral solution (25 mg. per milliliter) beyond 1:100 obviate this effect. With lesser dilutions, the peak effect, that is, fibrinoid necrosis and loss of all normal architecture in the vessel wall, occurs approximately thirty hours following injection.

The writers investigated the possibility that chlorpromazine also acts directly on tissues supplied by the injected artery.

In this study, rabbits were sacrificed at progressive time intervals after injection of the drug into the femoral artery. In histologic preparations, the acute phase of the process became recognizable at approximately 18 hours, and reached its peak after 30 hours. Distal tissue necrosis appeared to occur simultaneously with arterial necrosis and disruption. Associated tissue effect was therefore impossible to exclude with these experiments.

Buncke and Blackfield, who were aware of these problems, successfully transplanted large volumes of tissue on isolated vascular pedicles treated topically with chlorpromazine diluted only 1:10 with saline (2.5 mg. per milliliter). They did not encounter tissue necrosis. These studies were performed on rabbits, and included delicate procedures, such as transplants in which the ears of rabbits were switched

right to left and left to right on their central vessels after topical pretreatment with chlorpromazine. The results cast serious doubt on the possibility of the simultaneous occurrence of direct tissue effect and vascular necrosis after intra-arterial injection of chlorpromazine, but do not entirely eliminate it. Utilization of histochemical techniques to stain for oxidative enzymes within a short time after injection might solve this problem, inasmuch as all ensuing damage occurs during the first passage of the drug through the vessel.

Mechanical methods of occluding the bronchial artery have been unsuccessful, in general, because of numerous anastomoses and collaterals. Nevertheless, the effects of injecting small plastic spheres into the bronchial artery also are being evaluated by the present group.

In order to accomplish the thoracotomies necessary for the injection of the chlorpromazine, special equipment and techniques were developed as required.

Ventilatory studies were performed on equine lung sets. The total lung capacity was approximately 60 to 70 liters. Tidal volume was estimated at 5 to 7 liters, and minute volume, at 50 to 100 liters. From these measurements it was possible to specify requirements for adequate anesthesia. Initially, a positive-pressure breathing device (Bird Mark 7 respirator) was refitted to permit maximal flow rates of 225 liters per minute, with pressures variable to 50 cm. of water. Input connections were altered so that measured proportions of nitrous oxide, oxygen, and ether could be administered via a balloon-cuffed endotracheal tube (1.75 inches in diameter) in an open circuit. Later, a closed-circuit, positive-pressure anesthetic apparatus, using bromochlorotrifluorethane (Fluothane®), was constructed, and proved to be highly satisfactory.

Intubation of the horse is easily accomplished without visualization of the larnyx when the mouth is held securely open with a metal speculum. No premedication is used, but the balloon portion of the tube is heavily coated with a topical anesthetic jelly prior to insertion. Throughout each procedure, either the percent saturation of arterial oxygen is continuously monitored with an earpiece oximeter or frequent electrode measurements of arterial Po_2 are made. Frequent electrode measurements of arterial Pco_2 and pH are also made. Techniques of thoracotomy via a curvilinear posterolateral incision, with resection of the sixth or seventh rib, were developed in horses that were to be destroyed for other reasons. The resected rib margins must be smooth; otherwise, fatal lacerations of the lung will occur.

To date it has been difficult to devise a suitable means of handling large air leaks in the horse lung. Because the mediastinum of the horse is fenestrated, large, uncontrolled air leaks nearly always result in bilateral pneumothorax and, of course, death. Consequently, it was not feasible to perform lung biopsies at this stage of the project. Smaller air leaks, on the other hand, were successfully treated with indwelling rubber tubes attached to 2-liter plastic bags containing one-way flutter valves, or with continuous suction via 20-foot lengths of plastic tubing. Finally, throughout each procedure, rigid sterile techniques and precautions were observed just as they must be in any comparable procedure performed on a human being.

Between July 1, 1959, and July 20, 1962, the proximal bronchial arteries of 10 normal horses were exposed at thoracotomy and injected with chlorpromazine. The horses were all healthy male geldings, with an average age of eight years and an average weight of 1,100 pounds. Total doses of chlorpromazine varying from 200 to 600 mg. in a concentration of 25 mg. per milliliter were given to 8 horses. Two received 50 mg. of the drug diluted in 20 ml. of distilled water. The identity of the bronchial artery was confirmed by preinjection with methylene blue solution.

Three horses, in which the bronchial artery was not injected, were used as surgical controls. Postoperatively, they were sacrificed at intervals between 5 and 27 months; the findings were negative. An additional control horse received 250 mg. of chlorpromazine (25 mg. per milliliter) injected as a bolus into a segmental pulmonary artery via a cardiac catheter. At autopsy, two years later, a large dense parenchymal scar was observed in the vessel's area of distribution. The last horse in this series was emphysematous at the time of thoracotomy and was not injected.

Results

Three of the subjects with bronchial-arterial disease died of operative complications: one, from bilateral pneumothorax after lacerating its lung on sharp rib margins; one, from irreversible ventricular fibrillation and cardiac arrest during the surgical procedure; and one, from complete necrosis and rupture of the middle third of the esophagus after the bronchial-arterial cannula was inadvertently passed into an anastomotic branch of the esophageal artery, and injected.

Six of the remaining horses died as a direct result of the injection of chlorpromazine into the bronchial artery. Four deaths occurred between 30 and 100 hours after injection; one occurred after three weeks, and one, after three months. The seventh horse was sacrificed after living eleven months. In these 7 animals, it has been possible to observe in sequence the early and long-term effects on the lung of chlorpromazine injected into the bronchial artery.

Between 30 hours and three weeks, several progressive changes were noted microscopically: At first there was marked hemorrhage, and edema of the parenchyma, pleura, and interlobular septa. The pleura and interlobular septa were also necrotic and were infiltrated lightly with polymorphonuclear cells; the mesothelium was destroyed. Fibrinoid or hyalin-like necrosis, with loss of all normal architecture, occurred in the bronchial arteries and arterioles. This was followed by light, round-cell infiltration, extravasation of blood, and thrombus formation. The pulmonary arterial circuit appeared to be spared the primary effects of chlorpromazine. Inflammation did occur, however, in the adventitia of the pulmonary artery (which is supplied by the vasa vasorum from the bronchial artery). There was also apparent reduction in the total number of vasa vasorum, as they were no longer easily seen in the adventitia of the pulmonary artery. Bronchi and bronchioles underwent intense ischemic necrosis, and in many areas complete destruction of the entire airway wall occurred. The most interesting, acute lesions, from the standpoint of early emphysema, however, were numerous areas of focal alveolar hyalin-like change or fibrinoid necrosis.

Liebow stated that alveolar necrosis may occur in the pathogenesis of human emphysema involving only parts of the walls of alveoli, and thus lead to dissolution of their continuity while stimulating fibrosis in other parts.

At three months and at eleven months, extensive focal atrophic changes consistent with chronic pulmonary emphysema, including occasional bullous lesions up to 2 cm. in diameter, were present. Inspection of the deflated lungs at autopsy revealed numerous, pale, raised areas up to 8 cm. in diameter, which would not readily deflate. The extensive but focal distribution of these areas corresponded well with the manner in which a substance such as chlorpromazine or a dye would be distributed after rapid injection of a single large bolus. Macroscopic examination of these areas revealed markedly enlarged and confluent air spaces. Some of the remaining alveolar walls in these spaces were thickened; some, thinned; some, ruptured and retracted. The pleura was variably thickened and thinned. No adhesions, except at the line of the old incision, were noted. Many interlobular septa were distorted and retracted; some appeared lost. Airways displayed a variety of abnormalities. Some were narrowed and plugged with exudate; some were thickened; others were dilated, thin, and contained no plugs. The occasional bullous lesions and subpleural blebs present apparently resulted from rupture of damaged airspace walls into interlobular septal and subpleural connective tissue.

Microscopic examination of these areas revealed severely sclerotic bronchial arteries. The lumina were almost completely obliterated by fibrosis. A few were completely obliterated, and one was undergoing recanalization. Plugged, chronically inflamed, fibrotic bronchioles with distal emphysematous change were present. However, this was not always the case. Numerous patent, but severely scarred, and partially destroyed bronchioles were found also in association with distal emphysematous changes. Characteristic "knobs" of tissue, which—in the human at least—are said to represent hypertrophied smooth muscle, were seen occasionally at the distal bronchiolar level. The bronchi underwent similar changes and showed various degrees of fibrosis, chronic inflammatory reaction, and distal "flap-valve" narrowing, as well as degeneration of cartilage. The pleura and interlobular septa were fibrotic and demonstrated marked loss of elastic tissue. Enlargement and confluence of airspaces in all stages from mild to severe were histologically in evidence.

Associated with these changes was a variety of destructive changes in the alveolar walls. Some were irregularly thickened, with areas of fibrosis; some, thin and markedly avascular; others were disrupted and retracted. Many appeared to have been completely destroyed and were entirely absent. Typical fibrotic spur formations occurred at the ends of numerous disrupted alveolar walls and appeared to correspond, along with the fibrotic thickened areas in other alveolar walls, to the focal areas of fibrinoid necrosis noted in the acute stages of the experiment. Small amounts of a thin interalveolar and interstitial exudate were present in occasional areas. Alveolar elastic tissue was haphazardly arranged, fragmented, and retracted. This was especially prominent in areas of spur formation.

Discussion

Widespread acute parenchymal necrosis was induced in equine lungs following the injection of

chlorpromazine into the proximal bronchial artery. These changes resulted in the death of 5 of 7 animals. In the sixth and seventh animals, surviving 3 and 11 months, respectively, severe degenerative lesions appeared which were similar in pathologic anatomy to both natural equine and human chronic pulmonary emphysema. These lesions included vascular and parenchymal alterations. Alveolar walls became focally necrotic, fibrotic, and relatively avascular. Accordingly, irregular thickening and thinning and even complete destruction were seen in many areas. Others became disrupted and retracted. Typical clubbing and spur formations appeared. As a result, air spaces were coalescent and enlarged. Elastic tissue was fragmented and retracted. Ischemic bronchi and bronchioles became atrophic and fibrotic. The lumina of some were plugged with exudate. Cartilage was destroyed along with smooth muscle. Many distal bronchioles disappeared. Others were only partially destroyed. Characteristic knobs of hypertrophied smooth muscle were found in association with a few of them. It is possible that air became trapped in alveoli and that overdistention occurred as these airways, no longer capable of retaining their normal integrity, collapsed on expiration. Concurrently, there was attenuation of the total vascular bed. Irregular thinning and fibrous replacement were seen in the pleura and interlobular septa. Some septa seemed to have disappeared completely.

All of these chronic changes are essential for the histopathologic diagnosis of pulmonary emphysema as it is seen in the human lung. They are equally important in their entirety as criteria for evaluating the results of any experiment designed to produce emphysema in a form similar to that seen in man. Furthermore, it is probably these changes, acting in combination, which result in the characteristic physiologic disturbances of emphysema. It is, therefore, not enough merely to create simple overdistention or disruption of tissues. This has been accomplished in many past and recent investigations and seems to have been regarded as the major or often the sole criterion of judgment for the diagnosis of emphysema. Air space enlargement and disruption of alveoli are, of course, essential features in emphysema and, in themselves, conform to the basic definition of the word "emphysema," i.e., a swelling or inflation of tissue by air. This, however, does not constitute true chronic obstructive emphysema of the type found in human or equine lungs, whether occurring naturally or being produced experimentally. Many other lesions, especially atrophy, necrosis, fibrosis, and alterations in vascular and elastic tissues, must be present also.

More recently, other studies have been pursued that deal with the experimental production of emphysema in rabbits, dogs, and mice. These studies appear to be especially significant in view of the methods used. However, the normal pulmonary anatomy of these animals differs markedly from that of man and the horse and, therefore, their susceptibility to the development of identical lesions is restricted. Although further study is obviously required, a naturally occurring—but probably not identical—form of the disease has been demonstrated only in the rabbit.

All factors essential to the histopathologic description of chronic pulmonary emphysema in man are present in chlorpromazine-produced equine emphysema. The exact mechanisms leading to the occurrence of these phenomena are not clear. The prime effect might result from induced disease in the bronchial artery, but the possibility of chlorpromazine's acting directly on all exposed tissues cannot be excluded. Certainly the work of Buncke and Blackfield casts doubt on associated tissue effect, yet this group's experience with rabbits seems to support the thesis. However, time-interval examinations of tissue distal to a chlorpromazine-injected artery may be an inadequate means of discerning sequential events that could occur in the tissue within minutes after arterial disruption and loss of blood supply.

An alternate and perhaps more likely explanation of the effect of chlorpromazine also exists, namely, that this chemical is toxic principally for endothelial tissues, including capillaries, and must be injected to cause damage. This would tend to explain the lack of effect in Buncke and Blackfield's experiments and also the dense scar observed following injection of chlorpromazine into a segmental pulmonary artery. Thus, injection into a pulmonary artery would be almost totally disruptive, whereas injection of a proximal bronchial artery with its more limited distribution might be only focally damaging.

Further support of this view derived from results obtained in 9 additional horses. These horses were subjected to thoracotomy, and 25 mg. of chlorpromazine (2.5 to 5 mg. per milliliter) were injected into a distal subpleural branch of the bronchial artery situated at the left costophrenic angle. Use of heavy syringe pressure was necessary, and, under this pressure, clear exudates appeared locally over the pleura. Only 5 horses survived the acute phase of the experi-

ment. They were sacrificed at intervals varying from 68 to 298 days. Uniformly, there was dense subpleural and parenchymal scarring at the site of injection. These scars were 4 to 6 cm. in size and were associated locally with severe chronic endarteritis of the bronchial artery. No emphysematous changes were encountered. Thus, it is possible that distal over-injection brought most local capillary surfaces into contact with the drug and produced conditions and results similar to those occurring in the pulmonary artery injection.

Other mechanisms also requiring consideration are the possibility that emphysema occurred as a result of obstructive factors secondary to the severe necrotizing bronchiolitis, or was produced as a result of various autoimmune factors which might have been stimulated. The latter is suggested by the severe fibrinoid or hyalin-like parenchymal and arterial lesions.

Summary

Many theories of the etiology and pathogenesis of emphysema have been proposed. Perhaps through lack of a proper experimental subject, no theory has been proved by the experimental method.

The horse has been found to possess lungs anatomically similar to those of man, including an alveolar distribution of the bronchial arteries. Furthermore, chronic obstructive emphysema spontaneously develops in this animal in a form identical to that occurring in man. The horse, therefore, was selected as a suitable subject for these studies.

Ten normal horses were subjected to thoracotomy. The proximal bronchial arteries of each were injected with chlorpromazine, an antioxidant which regularly produces a severe, necrotizing, obliterative endarteritis. It was possible to observe in sequence the early and long-term effects of chlorpromazine injections in 7 animals. Between thirty hours and three weeks, severe necrotizing lesions with edema, interstitial hemorrhage, and inflammatory reaction were seen in all parenchymal elements. In the 2 animals that survived beyond twelve weeks, extensive focal atrophic changes occurred that were similar in pathologic anatomy to chronic pulmonary emphysema observed in man.

The exact pathogenesis of these lesions is not yet clear. Although secondary necrosis of all elements represents a likely mechanism, other factors, such as direct chemical effect, airway obstruction, or autoimmune phenomena, are also suggested by the pathologic findings.

(The references may be seen in the original article.)

ADAPTATION TO OPEN HEART SURGERY: A PSYCHIATRIC STUDY OF RESPONSE TO THE THREAT OF DEATH

Harry S. Abram MD. Amer J Psychiat 122(6): 659–668, Dec 1965.

Heart surgery, if only because of its newness and mystery, is an overwhelming ordeal. It is an even greater mental and spiritual ordeal than a physical one. As a great mystery to the patient, it is one that he can't face alone; shouldn't face alone.

Psychological response to cardiac surgery has interested psychiatrists, psychologists and surgeons for more than a decade. With advancement in this surgical field, the importance of postoperative psychological adjustment and the frequency of major psychiatric disturbances have become apparent. The recent implementation of the "heart-lung machine" or extra-corporeal circulation has widened these fields considerably. This paper is concerned with the cardiac patient's reaction to open heart surgery and the realistic threat to life with which each is faced at the time of operation.

In 1952 Bliss and associates reviewed the records of 37 adult patients undergoing mitral surgery. Of these patients 16 percent were "sufficiently anxious and depressed to merit comments by physicians and nurses" postoperatively. Fox and associates in 1954 studied intensively the long-term and emergency defenses of 32 patients having mitral surgery. Nineteen percent had "obvious emotional disturbances" following the operation. His group observed "the most important psychotherapeutic influence was, of course, the successful outcome of the operation," and "all of these patients reacted to the cardiac

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operation in terms of death or survival and the heart symbolized the life of the whole person."

Two years later Kaplan concentrated on the long-term adjustment of 18 patients who had had mitral commissurotomies. Seventeen percent experienced psychotic symptoms postoperatively. Kaplan noted the manner in which the patients adjusted psychologically "depended upon their total personality organization and their life situation." Excellent physical results did not always lead to a healthy psychological adjustment; even after "alleviation of the (heart) disease . . . they (the patients) are then faced with anxiety-laden problems which they had previously been able to avoid because of their heart ailments."

The psychological meaning of mitral surgery and the reactions of 24 patients with mitral stenosis were well studied by Meyer and associates in 1961. They described vividly the "catastrophe reaction" immediately following mitral surgery, which will be discussed in greater detail later in this paper. They concluded in a similar fashion to Fox's study that operating on the heart "partakes of the touching, manipulating, and cutting of an organ that, even by the most ignorant or the most unsophisticated subject, is viewed as the be-all and the end-all of life itself."

Three recent studies also worthy of note have dealt statistically with larger groups of heart surgery patients. Knox in 1963 reviewed retrospectively 50 patients undergoing mitral surgery and 40 patients prospectively with preoperative and postoperative interviews. In the retrospective study, 32 percent manifested some form of psychiatric syndrome postoperatively, ranging from 14 percent with hysterical symptoms to 2 percent with confusional states and another 2 percent with organic brain damage. In the prospective portion of the report 15 percent developed postoperative symptoms in the form of hysteria. Knox states that prolonged dependency needs and sexual maladjustment along with other indices were often found preoperatively in those patients developing hysterical symptoms postoperatively. Combining both the retrospective and the prospective study, 4.4 percent developed "severe psychiatric disorder" postoperatively. Egerton and Kay evaluated 90 adults and 36 children who underwent open heart surgery. Some 41 percent of the adult group developed delirious symptoms postoperatively. More recently, Blachly has observed the occurrence of "post-cardiotomy delirium." Of 139 patients surviving open heart surgery, 57 percent had psychotic reactions postoperatively.

This study is the third dealing with the psychological aspects of open heart surgery. Although the work of Egerton and Blachly deals with larger series of patients, little attention is given to the *individual* reaction of the patient to the stress of surgery. This paper is concerned directly and intimately with such reactions. As such it is more closely related to the studies of Fox and Meyer, which emphasize the psychological factors involved in the response to closed (non-extracorporeal circulation) heart surgery.

Method

During the six-month period of November 1963 to April 1964, 23 patients at the University of Virginia Hospital scheduled for open heart operations were interviewed preoperatively and followed postoperatively by the investigator. Two of these patients were not interviewed preoperatively because of lack of time but were followed postoperatively. The investigator acted as psychiatric consultant and was one of a team of consultants composed also of a cardiologist and neurologist who evaluated each patient preoperatively and postoperatively. The number of patients was limited by the time the investigator could allow for this study.

Preoperative interviews usually took place 24 to 48 hours prior to surgery and lasted approximately one hour. The interview technique was not rigidly structured and attempted mainly to develop the patient's life history, his attitudes toward his heart disease and the approaching surgery, his general personality structure and typical defense mechanisms for dealing with and handling anxiety. Postoperative follow-up consisted of daily visits after surgery until time of discharge. Some patients were seen after discharge from the hospital for further interviews or corresponded with the psychiatrist by mail.

Results

Of the 23 patients interviewed and upon whom open heart surgery was performed, 8 expired at the time of operation or shortly thereafter. A ninth patient died several months postoperatively and after further heart surgery. The patients ranged between the ages of 16 and 62, the average being 44 years. Eight were female and fifteen male. Thirteen had total aortic replacements, 1 an aortic scraping, 3 closure of interatrial septal defects, 2 mitral and aortic valve replacements, 2 mitral valve replacements, 1 pulmonary valvuloplasty and 1 diversion of an anomolous pulmonic vein drainage. All utilized the pump oxygenator. From a psychiatric viewpoint, 3 patients or 16 percent of those patients not expir-

ing at the time of operation developed severe psychotic episodes postoperatively; one patient became severely depressed, another severely anxious. These findings are summarized in Table 1.

Preoperative observations. In the preoperative psychiatric interview the two most common reactions to stress of the approaching operation were: 1) denial of the imminent threat to life facing the patient (33 percent); or 2) a breakthrough of the anxiety with its full expression during the interview (38 percent). The following illustrates a patient with *severe preoperative anxiety, a death omen and resignation to death prior to surgery.*

Case 16. Mr. R.R., a 53-year-old, separated, childless, ex-garage owner was admitted to the cardiovascular surgical service with a year's history of syncopal attacks and a diagnosis of aortic stenosis. A medical student working with the patient noted, "The examiner cannot help feel that the patient has symbolically closed the doors behind him (closed down business, etc.). He has no close relatives and comes here with great resignation. It is my hope this resignation is not negative." During the psychiatric interview 24 hours prior to surgery, it was obvious the patient was highly anxious. He had been up since 2:00 a.m. after having awakened with arm pain and severe anxiety. He expressed concern that his anxiety was getting out of control and that he would go "mental." He spoke of superstitious thinking that he had never experienced before. Specifically he had noticed for the past two consecutive days blackbirds roosting outside his hospital window. He then went on to comment that blackbirds rarely come near to buildings and usually stay out in the field. These blackbirds represented to him a "good sign" and furthermore he would not sign the operative permit unless they returned that evening. Shortly after these comments he spoke of having made out his will. There were no other remarkable features detected during the interview and no evidence of any psychotic process.

The following day he underwent surgery with aortic valve replacement. Postoperatively the patient did well throughout the first night but early the next morning he became restless with increasing respiratory rate and decreasing venous and blood pressure. In spite of heroic maneuvers, including cardiac massage, he expired within a few hours. Whether or not the blackbirds did actually return is unknown. But it is of interest the patient reversed or perhaps denied the omen of the blackbird, usually interpreted as a death symbol, into a "good sign."

Postoperative observations. In the immediate postoperative period the most common and perhaps consistent finding was the "catastrophe reaction" described by Meyer. These patients present a picture of complete apathy and fatigue after having gone through a severe stress and survived. Meyer states these patients resemble in their appearance "the photographed faces of survivors of civil disaster, the countenances of these patients present staring and vacant expressions of seeming frozen terror. Immobile, apathetic, and completely indifferent to their fate, they respond to inquiries in monosyllables devoid of affect." In the present study it was noted that after a few days this syndrome usually disappeared, followed by a mild depression and then a gradual lifting of the affect. However at times the reaction did not subside and the patient became psychotic. This state was discussed by Meyer in another paper dealing with the catastrophe reaction in which the apathy and withdrawal are "accompanied by harrowing repetitive dreams and phantasies which appear to be derivatives or reproductions of phases in the operative experience . . . the patient is in a state of excitement, associated with ideas of depersonalization, and visual hallucinations."

Two patients in this series developed psychotic reactions similar to the depersonalization and visual hallucinatory state described above. In this paper the investigator uses the term *cardiac psychosis* to describe this syndrome and to distinguish it from the apathetic stage of the catastrophe reaction. These psychoses were characterized by transient but recurring sensory hallucinations or illusions without disorientation to time, place or person. They were not typical of the usual postoperative delirium and apaparently different from the delirium described by Blachly in that the patients were well oriented and had closer ties with reality. Except for the absence of disorientation, the transient quality of the psychoses with periods of several remissions during a 24-hour period was similar to postoperative delirious states or acute delirium associated with brain damage in which there are bouts of confusion interspersed with periods of lucidity. For example:

Case 22. Mrs. M.B., a 56-year-old housewife, was admitted to the University of Virginia Hospital for the first time with a history of a strep throat and a febrile illness in her teens followed by an asymptomatic period until two or three years prior to admission. At that time she developed substernal chest pain on exertion, relieved by rest. Six months prior to admission she noticed ankle swelling; five

TABLE 1
Description of 23 Open Heart Surgery Patients

	PATIENT	AGE	SEX	DIAGNOSIS	PREOPERATIVE REACTION TO STRESS	OPERATION *	POSTOPERATIVE CARDIAC STATUS	MAJOR POSTOPERATIVE PSYCHIATRIC COMPLICATIONS
1.	G.A.	43	F	Mitral insufficiency	Anxiety	Mitral valve replacement	Improved	None
2.	E.B.	33	M	Aortic insufficiency	Anxiety	Aortic valve replacement	Expired	Severe anxiety
3.	M.C.	56	F	Atrial septal defect	Not remarkable	Closure septal defect	Improved	None
4.	J.D.	30	M	Mitral & aortic insufficiency	Not remarkable	Mitral & aortic valve replacement	Expired	None
5.	R.F.	43	M	Aortic stenosis & insufficiency	Anxiety	Aortic valve replacement	Expired	Cardiac psychosis
6.	L.G.	45	M	Aortic stenosis & insufficiency	Anxiety	Aortic valve replacement	Improved	None
7.	F.H.	54	F	Aortic stenosis	Not remarkable	Aortic valve replacement	Improved	None
8.	M.H.	57	F	Aortic stenosis	Denial	Aortic valve replacement	Expired * *	——
9.	M.J.	16	M	Aortic stenosis insufficiency	Anxiety	Aortic valve replacement	Improved	None
10.	J.L.	32	M	Atrial septal defect	Not remarkable	Closure septal defect	Improved	None
11.	R.M.	36	M	Aortic stenosis	Denial	Aortic valve replacement	Improved	None
12.	A.M.	60	M	Aortic stenosis, aneurysm ascending aorta	Denial	Aortic valve replacement, resection aneurysm	Expired * *	——
13.	A.N.	44	M	Aortic insufficiency, bicuspid aortic valve	Anxiety	Aortic valve replacement	Expired (after further hospitalizations and surgery)	None
14.	B.N.	50	F	Mitral insufficiency	Denial	Mitral valve replacement	Improved	Depression
15.	B.P.	34	M	Aortic insufficiency, mitral insufficiency and stenosis	Denial	Aortic & mitral valve replacement	Expired * *	——
16.	R.R.	53	M	Aortic stenosis	Anxiety	Aortic valve replacement	Expired * *	——
17.	H.S.	35	M	Atrial septal defect	Not remarkable	Closure septal defect	Improved	None
18.	P.W.	40	M	Congenital aortic valve, aneurysm ascending aorta	Denial	Aortic valve replacement, resection aneurysm	Improved	None
19.	C.G.	54	M	Aortic stenosis	Anxiety	Aortic valve scraping	Improved	None
20.	M.M.	62	M	Aortic stenosis	Denial	Aortic valve replacement	Improved	None
21.	M.D.	46	F	Pulmonic stenosis	—— * * *	Pulmonary valvuloplasty	Improved	Cardiac delirium
22.	M.F.	42	F	Anomalous pulmonary drainage	Depression	Diversion pulmonic drainage to left atrium	Expired (shortly after discharge)	None
23.	M.B.	56	F	Aortic stenosis	—— * * *	Aortic valve replacement	Improved	Cardiac psychosis

* All operations utilizing pump oxygenator.
** Expired at time of surgery or shortly afterward.
*** Patient not evaluated preoperatively.

months later, she had an episode of acute pulmonary edema. Diagnosis on admission was aortic stenosis, secondary to the rheumatic heart disease, inactive and congestive heart failure. The patient was not seen preoperatively by the psychiatrist, but no other physician observed any abnormality in her mental status.

During her operation, the aortic valve was replaced with a Starr-Edwards valve prothesis utilizing extracorporeal circulation. She tolerated the operation well and continued to do so in the recovery room until six days postoperatively when one of the recovery room nurses noted, "Patient is evidently experiencing auditory hallucinations—says she hears daughter's husband paged over p.a. system, has been smelling strange gas all day." That afternoon she was seen by the psychiatrist. She was oriented in all spheres but was convinced that she would be taken back to the operating room for more surgery and that "new machines" had been brought into her room to do her harm. Her "hallucinations" were in actuality illusions with misinterpretations of various stimuli about her. There were indeed voices coming over the loud speaker system, odors about, and various monitoring systems in use to gauge her pulse, heart functioning and other physiologic measurements. The psychiatrist explained the situation to her and offered to stop by daily to see her. For the next three days she continued to be suspicious and fearful. The psychotic symptoms then subsided and did not recur for the rest of her hospital stay, which was uneventful.

When interviewed nine months postoperatively she spoke vividly of her experiences in the intensive care unit. Her affect was brighter and more appropriate. She had returned to her work as a clerk in a local court house and physically was doing quite well. Nevertheless she still had not given up completely her illusions. She spoke of the gas, the machines, the p.a. system, and wondered what the purpose of their use in the ICU had been. These doubts did not seem to occupy a significant part in her life, but she was not convinced it was her "imagination" as her husband said it was. When her misinterpretation of reality was re-explained to her by the psychiatrist she accepted his interpretation with some but not complete relief of her doubts. She spoke of the reassuring aspects of the psychiatrist's visits during her stay in the ICU and the beneficial qualities of his "standing beside" her during these frightening episodes. She reiterated her awareness of her surroundings during the delusional and illusionary period, saying that she always knew where she was.

Each of these patients had a neurological evaluation which was essentially negative except for the mental status as described.

Discussion

When one considers the mortality of this series of patients, the threat of death is a situation with which each of these patients was faced. One may ask, "How much were these patients actually told about their chances to survive surgery?" Was their denial and anxiety related to what they had been told by their physician or was it based on factors outside of their awareness or by subliminal or nonverbal cues? As to what had actually been told the patients, the investigator can only surmise from what the physician and the patient told him. In all probability the patient was given an honest account of his prognosis but the risks of surgery minimized. If such were the case the threat to life was recognized also from other factors, perhaps related to cues the patients picked up from the personnel caring for them or from unconscious factors.

Anxiety reactions to impending death have been well described by Beigler, who states, "There is an unconscious awareness on the part of the patient of his impending death and . . . this is reacted to with anxiety that may be repressed." Weisman and Hackett speak of "middle knowledge" in the dying patient who is aware he is dying even though those about him deny it: "For the majority of dying patients, it is likely that there is neither complete acceptance nor total repudiation of the imminence of death."

In another but similar context Tolstoy describes the attitude of the dying patient and the physician treating him in *The Death of Iván Ilých:* "Iván Ilých knows quite well and definitely that all this is nonsense and pure deception, but when the doctor, getting down on his knee, leans over him, putting his ear first high then lower, and performs various gymnastic movements over him with a significant expression on his face, Iván Ilých submits to it all as he used to submit to the speeches of the lawyer, though he knew they were lying and why they were lying."

It is important to note in this series of patients that each had been seriously ill with chronic severe cardiac disease and not infrequently had had bouts of congestive heart failure, precordial pain, etc. Most looked upon surgery as potentially life-saving or death-producing.

As commented on by Fox and Meyer, the meaning of heart surgery to the patient seems to lie

directly with the threat of cessation of the organ realistically and symbolically associated with continuation of life. Several patients in the present study expressed fears of their heart "not starting up again" after repair of the diseased valve. Another wondered if he would be alive while his heart was stopped and he was on "the pump." Mr. E. B. and Mr. R. R., both of whom died postoperatively, expressed a fear of going insane. These patients may well have been expressing their concern about impending death. Weisman and Hackett comment, "The fear of dying may also represent itself in psychological terms as a fear of insanity."

The etiology and exact nature of the "cardiac psychosis" remains unclear, but it seems likely as described by Meyer that it is an extension or a part of the catastrophe reaction. An important factor mentioned by Meyer and also by Egerton is the role of sensory stimulation and deprivation in the formation of the postoperative psychotic symptoms. Egerton comments, "Apart from brief visiting periods and times of staff care, for a few days the patient's visual fields are restricted to white acoustic tiling viewed through the oxygen tent. Many patients remarked on the monotony of the ceiling, and visual hallucinations were often initially manifested by the appearance of patterns on the ceiling or of faces protruding from the small, regular holes in the tiling."

The similarity of this description and Meyer's patients with dreams, phantasies, depersonalization and hallucinations in the two cases in this paper described as "cardiac psychosis" is of interest and not dissimilar from patients with poliomyelitis in tank-type respirators described by Solomon and associates. In their series, "The mental abnormalities began after the patient had been in the tank respirator for 24-48 hours or longer, and were characterized by well-organized visual and auditory hallucinations and delusions reacted to in different ways and to different degrees." In these cases there were no "febrile, anoxic, toxic or metabolic derangements," and an "imposed structuring of stimuli" was postulated as the etiology of this order.

In 1938 Cobb and McDermott discussed 16 cases of postoperative psychosis who were not suffering from the usual delirium. These patients were well oriented but developed transient hallucinations and paranoid delusions. The authors comment: It is of especial interest that all of these patients are foreigners, and most of them have language difficulty. They feel truly outlandish (in the real sense of the word) and they act that way. The environment is new and strange, the customs of the hospital are nothing like those in their homes. Even the speech is difficult to understand. Many of them were brought to the hospital after an entirely inadequate explanation. Once on the ward, the busy staff looked after them well, but the doctors did not make an effort to find out if the patient really knew before the operation what it was all about, just what the procedure would be and why it was necessary. Then came the operation; normal fears were exaggerated by loneliness and strangeness. After operation when drugs cause dreaminess and confusion, these people all get panic feelings, ideas of persecution and punishment and even delusions and hallucinations. The duration of the psychosis is from one to several weeks and the delusions, hallucinations and ideas of persecution that at first look schizophrenic seem to clear up fairly quickly, go over into a diffuse anxiety state with depression and then disappear entirely.

It is suggested that careful psychologic preparation for the operation by means of interpreter or better a priest who speaks the patient's language, would make postoperative psychoses less likely to occur.

Thus Cobb and McDermott were discussing a form of sensory deprivation in patients following general surgery leading to a postoperative psychosis quite similar to the "cardiac psychosis" described in this study.

The intensive care unit (ICU) at the University of Virginia Hospital, which is apparently not dissimilar from such units in other hospitals, is a sterile, barren room save for four beds for postoperative patients, a multitude of machines required for maintenance of the patient's life and various physiologic measuring devices. The patients often associated the ICU with severe discomfort, waking up after surgery, tracheotomies, intravenous fluids, the cardiac pacemaker and the monitoring devices. Several believed that they improved only after leaving the ICU and looked upon going back there as a death warrant. The apparatus in this unit, the hushed tone of doctors and nurses hustling about in an urgent fashion caring for critically ill patients, the starkness and sterility of the room and the placement of tubes in every conceivable orifice leave ample grounds upon which to base paranoid delusions. As one physician stated, "We take over every function of the patient in his breathing, urinating, defecating and eating. I believe these patients become panicky over our taking away these privileges."

Although all these procedures are life-saving and the ICU is designed to care for in the most efficient

manner the patient returning from major surgery, the patients often reversed this meaning. That is, believing that leaving the ICU led to recovery obviously reversed the situation in that the patient was only allowed to leave after he stabilized physically. But psychologically speaking, the patients often did improve after being placed back in an environment in which they were more familiar, where the patients were not as critically ill and in an atmosphere of less urgency.

The problem arises as to how much the patient experiences sensory deprivation and how much is actually sensory overstimulation. Blachly comments, "These patients have just the opposite of sensory impairment, they have a fantastic amount of sensory input in the form of pain, noise from respirators, cardiac monitors, nurses and residents, etc., talking, multiple needle punctures, frequent examinations ad nauseum."

The patient in all probability experiences *both* deprivation and stimulation. The latter, however, consists of stimuli which are foreign, incongruous and dystonic to the patient; i.e. the monitoring systems, respirators, etc., in the intensive care unit. These devices, in spite of their necessary life-saving functions and their reassuring qualities to some patients, are perceived by others, especially those patients with poor reality ties, as threatening and ideal objects upon which to project their fears. The deprivation comes from the immobility of the patient and his estrangement from a familiar environment. Often for several days and at times longer the patient lies on his back, propped up and constrained by pain, urinary catheters and intravenous fluids.

It should be added that some investigators believe the mental changes seen after heart surgery are due to organic changes. Zaks performed a series of psychological tests on patients before and after closed mitral and aortic surgery. He concluded "clinically observed . . . psychiatric disturbances in patients undergoing mitral commissurotomy do not appear to be of a purely functional nature . . . psychiatric problems are triggered off by certain psychological functions which appear to be related to organic changes in the course of heart disease and mitral valve surgery."

Dencker and Sandahl in their study of mental disturbances after closed heart surgery for mitral disease conclude that the "operation as such is not responsible for the postoperative psychosis" and that it may be due to "an early cerebral injury of rheumatic type predisposing to mental disease." Blachly also ascribes the psychotic reactions of his patients after open heart surgery to organic causes, the etiology of which is unclear in his report. Several possibilities are given, such as alterations in the serum protein from use of the pump oxygenator or a defect in the catecholamine metabolism giving rise to a product similar to LSD.

A recent report, however, by Herbert and Movius using psychological testing on patients having closed mitral commissurotomies does not corroborate Zaks' findings. Their results are not compatible with those of others reporting postoperative CNS damage. Egerton also reported negative results for intellectual dysfunction on psychological tests given to his series of patients before and after open heart surgery. From a neurological viewpoint a variety of cerebral disorders have been reported after open heart operations by Gilman.

In conclusion, the question arises as to the role of the psychiatrist in the care of the heart surgery patients and certain prophylactic measures which could possibly prevent some of the severe postoperative psychotic reactions reported in this and other papers. As reported elsewhere, certain preoperative psychological factors, namely the excessive amount of preoperative anxiety, the use of denial as a major defense mechanism and unrealistic expectations for the proposed surgery, were found to be valid prognosticators of untoward postoperative psychological reactions in general surgical procedures. Because of the high mortality in this present series of patients these factors could not be further elucidated and verified except to note that preoperative anxiety and denial were common findings.

With regard to the threat to life with which each patient was faced and the actual number of deaths in a large proportion of the patients, the psychiatrists did play an active role in their care. Eissler writes, it is a "clinical fact—which as far as I know, is not disputed by anyone—that the psychiatrist has his rightful place at the side of the deathbed." Often in this group of patients the family and the patient looked to the psychiatrist as the most available member of the cardiovascular surgical team. Although he was not involved in the actual surgical procedure and did not go into details of the operation or the prognosis with the patient or family, he could give them certain information about the operation and at times keep the family informed of the patient's progress. In addition to listening to the patient's concerns about and fears of surgery and death, the psychiatrist had relatively close contact with the

family postoperatively, not infrequently listened to their outpourings of grief in the case of death and experienced some of their feelings himself.

A relatively common finding was the lack of information given the patient preoperatively as to what could be expected postoperatively, especially his experience in the intensive care unit. From a preventive viewpoint such an explanation, with a carefully detailed preview of waking up with an endotracheal tube in place, possibly being on a respirator, being catheterized and on intravenous feeding and fluid maintenance, should be given in an attempt to relieve or allay postoperative anxiety. The use of cardiac monitoring and other physiologic measuring devices could also be described to the patient to reduce the possibility of paranoid projection upon these instruments. At times a preoperative visit to the ICU would be in order. Undoubtedly such measures would not entirely eliminate the postoperative psychoses and delirious states. But such explanations and attempts at establishing a doctor-patient relationship based on trust and honesty are backed by sound clinical and humanitarian principles.

Weisman and Hackett effectively utilized such a relationship in decreasing the incidence of delirium after cataract surgery. Cobb and McDermott discuss a similar relationship. Possibly allowing the patient to talk about his fears of death or if it be the case permitting him to entertain in his awareness the longing to die may prevent a postoperative panic which disrupts somatic processes. Working with the caretaking personnel especially in the ICU and instructing them in the psychological aspects of the surgery and postoperative care may also be helpful. Certain physiologic factors, e.g., avoiding dehydration and insuring adequate pulmonary ventilation, have been stressed in the prevention of postoperative psychotic states and are of definite importance, yet the psychological meaning, both realistic and symbolic, of this surgery should also be considered in the patient's preoperative preparation and postoperative care.

Summary

This report is a clinical study of 23 patients undergoing open heart surgery and how some responded to it. It is evident that these patients reacted to the operation as presenting not merely a symbolic but realistic threat to life. The presence of anxiety and the use of denial preoperatively are described. Two cases of postoperative "cardiac psychosis" are reported and their relationship to the "catastrophe reaction" and "post-cardiotomy delirium" commented upon. The intensive care unit is seen as a life-saving necessity in modern heart surgery but at the same time frequently perceived by the patient as psychologically threatening. Certain prophylactic psychological measures are discussed.

(The references may be seen in the original article.)

FROM THE NOTE BOOK

IMMUNE SERUM GLOBULIN (ISG)

The procurement specifications for Immune Serum Globulin (ISG) are being changed to include this material produced from human placental sources as well as from human plasma.

The color of ISG produced from human placental sources is light reddish-brown due to iron pigment derived from hemoglobin. (ISG obtained from human plasma is straw colored.) All clinicians and medical supply personnel are advised that the reddish-brown color of ISG derived from human placental material is not evidence of deterioration and that it does meet the standard for use in patients.—Professional Div, BuMed.

THE NATIONAL LIBRARY OF MEDICINE

Across Rockville Pike from the National Naval Medical Center in Bethesda, Maryland is the world's most extensive collection of biomedical literature—the National Library of Medicine.

The collection was started in 1836 with a handful of medical texts then identified as the "Library of the Surgeon-General's Office" (Army). Over the years, as the collection grew, the name underwent several transformations until, in 1956, as the result of legislation sponsored by Senators Lister Hill and John F. Kennedy, it became a national resource and was named the National Library of Medicine. Today the collection comprises more than 1,200,000 biomedical books, theses, journals, pamphlets, prints, and microfilms.

Because of the phenomenal growth of scientific literature in the fields of medicine and biology, by 1960 it was apparent that the only way the Library could maintain rapid bibliographic access to this vast reservoir of information would be through a carefully planned program of mechanization. MEDLARS

(Medical Literature Analysis and Retrieval System), a computer-based information storage and retrieval system, was born of this program in 1964.

How MEDLARS Works

MEDLARS is divided into three major components; an Input Sub-System, a Retrieval Sub-System, and a Publication Sub-System.

The Input Sub-System combines the intellectual talents of trained literature analysts with the processing and storage capabilities of the computer. Literature analysts index the subject content of articles from more than 2,500 biomedical journals. They assign appropriate descriptors from the Library's controlled list of terms called MeSH (Medical Subject Headings). Indexing data are then transferred to punched paper tape for input to the computer.

The Retrieval Sub-System begins with the receipt of a request for a search of the computer's store for citations bearing on a specific subject. Such requests are prepared for MEDLARS by a staff of search specialists who have had extensive training in both indexing and the logic of computer searches. The printed lists of citations obtained from the computer are called "demand bibliographies."

The Publication Sub-System is concerned with preparation of periodic indexes to current biomedical literature. Best-known of these is *Index Medicus,* a comprehensive, monthly, subject-author index to articles from the world's biomedical journals. Another type of index prepared by MEDLARS is the recurring bibliography—a periodic list of citations in specialized medical subject areas such as heart disease, rheumatology, and dentistry. The indexes are printed from film pages composed by GRACE (Graphic Arts Composing Equipment), a high-speed computer phototypesetter.

Traditional Library Services

The main reading room at the Library has a seating capacity of over 200. It is open to the public from 8:30 a.m. to 9:00 p.m. Monday through Friday, 8:30 a.m. to 5:00 p.m. Saturday, and 2:00 p.m. to 6:00 p.m. Sunday.

The Library provides national and international access to its collection through its interlibrary loan program. Upon request for loans, NLM provides users of local libraries with photocopies of articles from journals which those libraries do not possess and which are not available locally. There is no charge for this service, and photoduplicated material may be retained by the requester.

The Library also acquires and catalogs medical literature of historical importance. The historical collection, which numbers over 60,000 items, may be consulted by any responsible investigator. Requests for interlibrary loan of historical material are considered on an individual basis, and, in most cases, if the original cannot be loaned microfilm copy can be provided.

New Opportunities

In 1965, the 89th Congress passed the Medical Library Assistance Act, designed to provide support for the Nation's medical libraries. Under the law, NLM will implement programs of assistance for the construction of medical library facilities, training of medical librarians, research and development in library science, expansion of resources, development of regional medical libraries, and support of biomedical scientific publications.

In signing the law, President Johnson noted that the Nation's medical libraries are a vital link between medical education, practice, and research.—Reserve Div, BuMed.

DR. EISEMAN TOURS NAVY MEDICAL FACILITIES

Navy Surgeon General sent Dr. Ben Eiseman, civilian consultant and advisor in surgery, on a six-week tour of Navy medical facilities in the Pacific, Feb. 16. He will study resuscitation problems and evaluate surgical facilities, equipment and procedures.

This Medical News Letter is grateful to Dr. Eiseman for having contributed or sponsored eight feature articles on "What's New in the Treatment of the Injured," the first appearing in Volume 45, No. 6 dated 26 March 1965.

DENTAL SECTION

EVALUATION OF TREATMENT OF INFLAMMATORY PAPILLARY HYPERPLASIA OF THE PALATE

Bolender, C. L., Swenson, R. D. and Yamane, George. J Pros Den 15(6): 1013–1022, Nov-Dec 1965

The authors cite several of the suspected causes of inflammatory papillary hyperplasia, including poor oral hygiene, monilial infection, relief chambers in dentures, ill-fitting dentures, movement of dentures in function, and faulty occlusion of dentures.

The object of the investigation was to evaluate the effect of wearing new dentures subsequent to surgical removal of the hyperplastic tissue as opposed to the effect of wearing new dentures without surgical removal of the affected tissue.

Twenty subjects were studied, all of whom wore complete dentures and each of whom displayed inflammatory papillary hyperplasia of the mucoperiosteum overlying the hard palate. To rule out the possibility that any other entity was present, the diagnosis was confirmed by biopsy before any patient was accepted for the study. Microscopic examination of tissue from the lesions showed hyperplastic epithelium, only a slight degree of keratinization, and rete pegs projecting into the lamina propria. The basement membrane was clearly intact and the basal cells sharply demarcated. The lamina propria showed edema, and infiltration with lymphocytes and plasma cells to complete the classic microscopic picture.

In 10 of the subjects supraperiosteal removal of the lesion by a high frequency electrical cutting instrument was accomplished. The other 10 subjects merely had new dentures constructed over the existing lesions. In the 10 patients in whom surgical removal of the lesion had been performed, a temporary lining of hard-setting zinc-oxide and eugenol paste was placed in their existing dentures immediately following surgery. This temporary lining was renewed at 2- to 3-week intervals until healing was complete. New dentures were then constructed for this group, and after 12 months both groups of subjects were again evaluated histologically by biopsy.

The authors' results in this study indicate what many have suspected for some time, namely, that inflammatory papillary hyperplasia will not be resolved by any method short of supraperiosteal surgical removal. Although a few subjects who did not undergo surgery showed a slight improvement in the condition with construction of new dentures, the degree of improvement shown was far from acceptable. Those in whom the lesions were surgically removed showed normal, healthy mucoperiosteal tissues 12 months later.

(Abstracted by CDR Robert J. Leupold DC USN, Head, Removable Partial Denture Division, U.S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland.)

PERSONNEL AND PROFESSIONAL NOTES

AUTHORIZATION FOR ADMINISTRATION OF ANESTHESIA AND FOR PERFORMANCE OF OPERATIONS AND OTHER PROCEDURES. (Standard Form 522). From time to time, it is learned that certain dental activities or individual dental officers have developed a form for "Consent to Treatment" and/or "Covenant Not to Sue." Standard Form 522 described in Chapter 23, Section 216 of the Manual of the Medical Department, is provided for this purpose. Individual or unique forms for this purpose have the weakness of being non-standard. When a dental officer is not satisfied with the legally implied consent that generally goes with the patient's visit to the office and the actions of the patient in getting into the chair or otherwise assuming position for a specific treatment, the Standard Form 522, which is provided for consents to operations and other procedures, should be used. If the form is considered inappropriate by the dental officer because there is an allusion to a medical facility or medical staff, those words may be struck out and the word "dental" substituted. The strength of the Standard Form 522 is that it is provided for all U.S. Government agencies, it has a long history of precedents, and it is readily recognized by medical, legal and supporting personnel who review treatment records.

The Standard Form 522 has space for description

of the operation or procedure; and a statement such as one of the following may be typed into the space following "of" _____:

(1) emergency dental care for relief of acute infection: I understand that after this emergency care, I am responsible to select a private source for continued treatment.

(2) periodontic treatment: I understand that this periodontic treatment may not be completed by the time I return to the U.S. and that the Navy is not responsible for any work after the patient leaves the area.

(3) routine dental care: I understand that this treatment is on a "space available" basis and that the Navy is not responsible for any continuation of care for which non-Federal facilities are available.

(4) emergency dental care as described on the reverse of this paper.

(5) dental treatment as described on the reverse of this paper.

In (1), any emergency condition may be substituted for "acute infection." In (2), any long term treatment such as "occlusal equilibration," "interceptive orthodontics" or "orthodontic treatment" may be substituted. Suggestions (4) or (5) permit description of any condition, in the detail believed necessary by the dental officer. When none of the suggested forms appears apt, or additional space is required, any common sense description may be typed on the back of the form; and in this case, the patient or parent signature should immediately follow. In any case, one should not make the mistake of treating such statements as rote. It is the duty of the dental officer personally to make sure that the patient, or parent, who signs Standard Form 522 understands the statement. In law, any consent is required to be "informed" consent. Therefore, the practitioner must acquaint the patient (or the parent) with the professional facts, and with what may seem to be the most cogent possibilities involved in the action or treatment which is contemplated. In any unusual risk, there is nothing wrong with including on the Standard Form 522 a statement which shows that the patient or parent was aware of the risk and did affirmatively assume that risk. This evidence is a legal defense to complaints other than those based on proven negligence.

Standard Form 522 does not include a waiver of negligence or an agreement not to sue. A waiver of negligence, as a matter of law, is contrary to public policy, and may be repudiated by the patient or sponsor at any time. Such a waiver has no legal standing. It would seem logical that such a waiver, or covenant not to sue, would actually tend to weaken the confidence of the patient in the practitioner.

APPLICATION FOR DENTAL TECHNICIAN SCHOOLS AND COURSES. BUMED INSTRUCTION 1510.2D (Training Available to Group XI, Dental Ratings) is in the process of cancellation. Available training and prerequisites are now contained in BUMED INSTRUCTION 1500.9 (Navy Medical Department Formal Schools Catalog). Procedures for application are contained in the Enlisted Transfer Manual (NAVPERS 15909A).

Responsible Dental Officers are requested to ensure that all qualified dental personnel who are desirous of attending dental technicians schools submit their school choice in block #7 of the Rotation Data Card. Two additional choices may be indicated in block #11 if so desired. The indication of more than one school choice provides additional assurance that personnel will attend a school when rotated between permanent duty stations.

The prosthetic speciality has the largest requirements for training above the "A" school level, therefore the greatest need exists in this area.

JOINT JAPANESE-AMERICAN PROFESSIONAL CONFERENCE. Thirty-five Japanese dentists from the Yokosuka-Yokohama area of Japan joined the dental officers of U.S. Naval Dental Clinic, Yokosuka, Japan and the Dental Department of the USS ISLE ROYALE in a joint Japanese-American professional conference on February 7, 1966. Included in those participating were Doctor Koh Nakazawa, President of the Yokosuka Dental Society; Doctor Rinzo Higaki, Dean of the Kanagawa Dental College; Doctor Takeshi Hori, Dean of Nippon Women's Dental Hygiene Junior College; and Commanders Hironari Saito and Kohjiroh Ishiguro of the Japanese Maritime Self Defense Force. Also attending the social events following the conference were RADM Frank L. Johnson USN, Commander U.S. Naval Forces, Japan; and CAPT Charles C. Hartigan USN, Commander U.S. Fleet Activities, Yokosuka. Official host for the event was CAPT William C. Wohlfarth, Jr., DC USN, Force Dental Officer, COMNAVFORJAPAN and Commanding Officer, U.S. Naval Dental Clinic, Yokosuka, Japan.

In addition to tours of the Dental Department of the USS ISLE ROYALE and the U.S. Naval Dental Clinic, Yokosuka, professional presentations were

made by CAPT L. L. Gunther DC USN on "Acrylic Covered Wire Splint for Periodontally Involved Teeth"; LCDR John L. Lindsay DC USN on "Aseptic Techniques in Oral Surgery"; LCDR H. E. Richter, Jr., DC USN on "Laboratory Procedures in the Fabrication of Chrome Cobalt Alloy"; LT David L. Bozikowski DC USN on "Partial Dentures with Minimal Clasping"; LT Stephen J. Levine DC USN on "Oral Surgery for the Edentulous Patient Prior to Full Denture Construction"; and LT Larry D. Sullivan DC USNR on "Pin Reinforcement and Retention of Amalgam Restorations."

DENTAL OFFICER PRESENTATIONS. CAPT Gordon H. Rovelstad DC USN presented a lecture on "Current Concepts in Caries Prevention" before the Illinois Dental Hygienists Association on 28 February 1966 in Chicago, Illinois. On 1 March CAPT Rovelstad presented limited attendance clinics on "The Prevention of Dental Caries" before the Chicago Dental Society, and on 2 March he presented an essay on "Dental Caries Prevention" to the Chicago Dental Society. CAPT Rovelstad is Director, Dental Research Facility Division, Dental Department, Naval Administrative Command, U.S. Naval Training Center, Great Lakes, Illinois.

CDR James R. Elliott DC USN, Marine Corps Base, Camp Lejeune, North Carolina, presented a lecture on "Preventive Periodontics" before the Camp Lejeune Dental Society on 24 February 1966. The meeting was attended by 48 civilian and military members of the professional community.

LCDR Wallace D. Loo DC USN, Naval Air Station, Barber's Point, Hawaii, presented a lecture entitled "Modified Meyer's Chew in, Current Physiological Concepts regarding Full Denture Construction" before the Kokua Dental Study Club. The presentation was on 21 February 1966 at Honolulu, Hawaii.

LCDR Alexander D. Sanderson DC USN and LCDR J. F. Lessig DC USN presented table clinics at the 24th annual meeting of the Puerto Rican Dental Association held at the El San Juan Hotel, San Juan, Puerto Rico during the period 26-29 January 1966. LCDR Sanderson demonstrated "Occlusal Coordination," and LCDR Lessign exhibited "Oral Photography." CAPT Robert I. Phillips DC USN represented the 10th Naval District.

The following Navy Dental Corps Officers presented table clinics at the 96th Annual Session of the Wisconsin State Dental Society on 20 April 1966 at Milwaukee, Wisconsin:

"A Method for Immediate Dentures"—CAPT T. J. Pape DC USN and CAPT G. A. Pfaffmann DC USN.

"Preventive Periodontics for the General Practitioner"—CDR C. F. Rau DC USN.

"Office Bacteria Study"—LCDR R. W. Longton DC USN.

"Acrylic Veneer Crowns"—LT W. M. Sweeney DC USNR.

"Check-bit Crown and Bridge Technique"—LT S. J. Chaconas DC USNR.

"Gold Base Dentures"—LT H. W. Suchy DC USNR and LT K. H. Walter DC USNR.

On 24 January 1966, the Northern California Society of Oral Surgeons met at Letterman General Hospital. Letterman and U.S. Naval Hospital, Oakland joined forces to present a program of unusual case reports. Each report was discussed by a panel of experts, COL W. R. Irby DC USA, CAPT R. A. Middleton DC USN, Doctor L. O. Bishop, Doctor Sanford Moose and MAJ Gilbert Lilly DC USA.

CAPT R. A. Middleton DC USN and CDR J. F. Hardin DC USN spoke at the Southern Alameda County Dental Society on "Why Preventive Dentistry," on 15 March 1966, at Hayward, California.

DENTAL OFFICER ELECTED TO AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. CAPT C. A. Ostrom DC USN has been elected vice president of the American Association for the Advancement of Science, Section on Dentistry, and Chairman of its 1966 annual meeting. CAPT Ostrom presently serves as Head, Professional Branch, Dental Division, Bureau of Medicine and Surgery.

CASUALTY TREATMENT TRAINING COURSE. Fourteen dental officers of the U.S. Navy and one civilian, representative of the American Dental Association, have completed the Casualty Treatment Training Course at the U.S. Naval Dental Clinic, Norfolk, Virginia. The course, under the supervision of the Bureau of Medicine and Surgery, is one of three conducted throughout the Navy to develop in dental officers such skills in emergency casualty treatment as to make full use of their professional knowledge, thus enabling them to amplify the medical effort in time of major emergency. This is the first course to be conducted here this year. The next class convenes on 23 May 1966. Similar courses are held at Bethesda, Maryland; Great Lakes, Illinois; and San Diego, California. Attend-

ing the course here were CAPT E. A. Walsh DC USN; CDR D. B. Ehrlich DC USNR; LT W. G. Hoover DC USNR-R; LT C. M. Davis, Jr. DC USNR-R; LT M. Schemick DC USN; LT H. P. Skidmore DC USN; LT P. T. Shore DC USN; LT F. T. McIver DC USNR; LT R. H. Boltz DC USNR; LT L. J. Carapezza DC USNR; LT G. B. Groff DC USN; LT E. F. Parthum DC USNR; LT R. E. Jabbour, Sr. DC USNR; LT H. W. Wilson, Jr. DC USNR; Dr. F. C. Slaughter. The Casualty Treatment Training Course was under the direction of CDR E. C. Penick DC USN, and CAPT W. R. Staples DC USN. RADM E. G. F. Pollard DC USN is Commanding Officer of the U.S. Naval Dental Clinic, Norfolk. CAPT J. P. Arthur DC USN is Executive Officer.

KNOW YOUR DENTAL CORPS

U.S. FLEET ACTIVITIES SASEBO, JAPAN

Sasebo, a city of approximately 270,000 people, is located in the prefecture of Nagasaki, the southernmost island of Japan. It has one of the finest deepwater harbors in the world. This sheltered harbor, the westernmost in Japan, is capable of accommodating the entire Pacific Fleet. Ships moored here can ride out typhoons in comparative safety.

Geographically, Sasebo is located in about the same latitude as Charleston, South Carolina. The rainy season of late spring and early summer changes dramatically to near tropical heat. September is typhoon month. The fall and early spring are beautiful both weather-wise and foliage-wise. The many deciduous trees with their changing leaves makes the countryside a splash of color in the autumn. In the spring the hills are covered, first with cherry-blossoms and then by azaleas. Nearly all arable ground is converted into rice paddies. The spring and summer months are ideal for small boating and the local Navy Yacht Club has three types of craft available to qualified members; dingy sailboats, windmill sailboats and motorboats. Other recreational features include a ten lane bowling alley, a nine-hole golf course, and 6 tennis courts. Special Services arranges tours to the many sightseeing areas readily available by bus and rail. These include Nagasaki with its colorful "Okunji" (rice harvest) festival and atomic bomb site; Hita for cormorant fishing; Mt. Aso, an active volcano; Beppu and Unzen, both famous for their hot springs; Hirado, where early trade with "foreigners" took place; and numerous others.

Until the summer of 1957, the Dental Department was divided between the base clinic, a quonset hut on the base, and a three-chair clinic in the hospital. At that time the present building was acquired. It has been developed into a ten-chair dental clinic. The ten operatories along with a large prosthetic laboratory, x-ray room, darkroom, a small waiting room, recovery room, a sterilizing room, and a lounge for the dental officers are located topside. The lower deck is composed of administrative and utility spaces. Included in the administrative spaces are a patient waiting room, appointment desk and administrative office, repair shop, and shops-store storeroom. The entire building is air-conditioned, a necessity in the hot, humid summer months.

The staff consists of five dental officers, eight dental technicians and six Japanese employees. Three of the Japanese employees are trained dental hygienists and one is a graduate dentist. The Japanese dentist, a woman, works in the dependent clinic. A full time preventive dentistry program under the supervision of the preventive dentistry officer, utilizes the services of two of the hygienists.

Monthly professional meetings, to which the dental officers from visiting fleet units as well as the local Japanese dentists are invited, are held on the fourth Friday of the month at the officers' club. These meetings are well received, with the presentations frequently being delivered by a dental officer from the fleet.

AEROSPACE MEDICINE SECTION

RAMBLING WITH AVIATION PHYSICAL QUALIFICATIONS

CAPT N. D. Sanborn MC USN, Head, Aviation Physical Qualifications Branch, Bureau of Medicine and Surgery.

Manual of the Medical Department Proposed Changes

"The needs of the service," policy changes, the ever-changing work situation and progress have required a number of changes in physical standards pertaining to aviation personnel. Revision of physical standards and updating certain aspects in Section V, Aviation Medicine, of Chapter 15 of the Manual of the Medical Department has been submitted for clearance and should be published in the near future. BUMEDNOTE 6110 of 4 March which will promulgate to the field some of the more urgent changes in physical qualification standards prior to publication of the Manual changes, hopefully will be distributed before this article appears in the Medical News Letter.

A brief discussion of some of the changes, pertaining to the selection of candidates for certain aviation programs, might be helpful and more meaningful.

Background

It is now the desire that all Naval Aviators and Flight Officers have a college degree. Therefore the NAVCAD Program is being phased out. However, because of the world situation, the quotas for entering student aviators have been increased. Recruitment difficulties prompted reevaluation of existing standards. Graduates of the Naval Academy are accepted for flight training with minimal or borderline deviation of the physical standards. Since college graduates are comparable in age and other aspects to Academy graduates, more consistent standards for all baccalaureate applicants have been promulgated. More realistic weight and blood pressure standards, as well as the elimination of the "Schneider Index" ("Circulatory Efficiency Rate") also resulted with the evaluation of existing standards.

Proposed Revision to MANMED

Article 15–67

(1)(b)(1) will read:

Not less than plano (baccalaureate—not less than (minus) −0.25) or more than (plus) +2.50 diopters correction in any meridian.

(1)(c) Deleted—since height of 64 to 78 inches was promulgated by BUMEDINST 6110.8.

(1)(d) Deleted—the maximum weight will be the same as Service Group I, MMD 15–17 (table 1) or commissioning standards, MMD 15–17 (table 2), whichever is less.

(1)(g) Blood pressure deleted. (Note—commissioning standards have been revised so standards will apply to Service Group I).

Articles 15–62(7)(a) thru (d) are being deleted and replaced with the following:

(7) Blood Pressure and Pulse Rate.—The neurocirculatory efficiency test (Schneider Index) is no longer required. There is no objection in determining or recording the index, however it shall not be used in determining qualification for duty involving flying.

(a) Blood Pressure.—Will be determined first with the examinee recumbent and then after standing motionless for three minutes, preferably employing a mercurial sphygmomanometer. Prolonged bed rest shall not precede the determination of the blood pressure; however, due regard must be given to the age of the examinee and to physiological causes such as excitement, recent exercise, illness and digestion. No examinee shall be rejected as the result of a single determination. When the blood pressure determination at the first examination is regarded as abnormal, the above procedure shall be repeated twice daily (in the morning and in the afternoon) for a sufficient number of days to enable the examiner to arrive at a definite conclusion. The first determination will be recorded in item 57(b & c) and the repeat determination in item #73 of the SF 88. Blood pressure determinations shall be made in accordance with the recommendations of the American Heart Association. The systolic reading shall be taken at the first ausculatory sound. The diastolic reading shall be taken when the ausculatory sound disappears.

(b) Interpretation of Blood Pressure Determinations.—In examinees under 35 years of age, a persistent systolic blood pressure of 140 mm. or more is disqualifying. In examinee over 35 years of age the persistent systolic blood pressure of 150 mm. or more is disqualifying. A persistent diastolic

blood pressure of 90 mm. or more is disqualifying. When changing from the recumbent to the standing position and remaining in that position for 3 minutes, if the systolic or diastolic blood pressure is found to be persistently more than 10 mm. below that of the recumbent position, it is disqualifying. Systolic blood pressure persistently less than 100 mm. is disqualifying unless a complete evaluation shows no cardiovascular or other abnormalities.

(c) Pulse Rate.—Will be determined first with the examinee recumbent, then, after standing motionless for 3 minutes (both at the time of the blood pressure determination), immediately following exercise and 2 minutes after exercise. The same consideration and reexamination of paragraph (a) of this article applies. The pulse rate shall be determined by counting the pulse for 15 seconds, multiplying by 4 and recording in the appropriate spaces in item #58 of the Standard Form 88. Allowing for age, physical limitations and history of recent illness, exercise will consist of (a) completely stepping up (step down with opposite foot used to step up) a single step 19 inches high, (b) two steps 9½ inches high, five times in not more than 15 seconds or (c) run in place, bringing the feet up in front at least 4 inches off the floor, for 25 counts (each time the right foot hits the floor is one count). The exercise will be terminated immediately if untoward symptoms are noted. In the presence of a relevant history, arrhythmia or a pulse of 50 or under, an electrocardiogram shall be obtained.

(d) Interpretation of Pulse Rate.—Resting pulse shall not persistently exceed 100. Standing pulse shall not persistently exceed 110. Pulse after exercise; any increase response is adequate, no minimum or maximum rate. Pulse rate 2 minutes after exercise shall return to within 10 beats per minute of the standing pulse. Pulse rate of 50 or under in the presence of a negative cardiac history and the absence of abnormal physical or electrocardiographic findings shall not in itself be considered disqualifying.

Other Proposed Changes to MANMED

In addition to the above specified changes, additional changes of note are as follows:

1. Incorporation of BUMEDINST 6120.11C, Physical Qualifications by the Federal Aviation Agency of Navy, Marine Corps, and Coast Guard personnel and BUMEDINST 6410.2B, Special Board of Flight Surgeons.

2. Elimination of the "high and low" (altitude) categorization of the Naval Flight Officer (NFO) and revised visual acuity of 20/100 or better.

3. Including Aviation Physiologist and Aviation Experimental Psychologist with the Flight Surgeon standards.

4. Changing the name "aircrewman" to read "crewmember".

5. Clarification of the visual acuity of not less than 20/50 requirement for training leading to the designation of Parachute Jumper.

Assistance Requested

Code 511 continues to return over 13% of the 1,300 health records processed a week. The main reasons for return are: omission of required information, disqualifying entry which is in conflict with the field's recommendation and additional information prompted by a statement or finding recorded on the SF 88 and/or SF 89.

Omissions and disqualifying entries can be eliminated by team work of the examiner, typist, reviewer and the signing flight surgeon. If each is familiar with the required standards for the various aviation programs and cross check each other, errors in the completed physical should not occur. The signing flight surgeon is the only one of the examining team whose name is known by BUMED and therefore he takes all the responsibility for an aviation physical that has to be returned. In other words, the flight surgeon's reputation can be influenced by the official records submitted to BUMED that he has signed.

A few of the other causes for return letters from BUMED are:

1. Conflict of items 5 and 77 in candidates and in items 3 (designator), 5, 17 and 77 in designated personnel.

2. In candidates:

a. Varicocele—size and if symptomatic, is required.

b. Item 19 of SF 89—if family history (mother, father, brother, sister or *two* grandparents) a glucose tolerance test is required.

c. Item 60, if required, within six months of reporting for flight training.

3. Post Hospitalization flight physical submitted without a narrative summary or insufficient elaboration concerning the hospitalization.

Of course each item of the SF 88 could be taken individually and the numerous errors that have been made in recording listed. Suffice to say that if each member of the team is conscientious about his job,

the additional workload of the examining activity and BUMED would be greatly reduced.

Attention is Invited to:

A. BUMEDINST 6110.9A—Please note that the nomenclature of enlisted aircrewman has been changed to *crewmember* to conform with BUPERS Manual. Many crewmember and noncrewmember physicals are being received without the field's endorsement.

B. SF 88 Item 60—"Lenses" or "Pin Hole (P.H.)" is not acceptable for the correction of defective visual acuity to 20/20.

C. SF 88 Item 15—Use of ZIP CODES in addresses.

As in the past, BUMED (Code 511) encourages communication from the field concerning specific problems or matters in which this Code can be of assistance.

RESEARCH ORIENTATION AT THE AEROSPACE MEDICAL INSTITUTE, PENSACOLA

Research

A change in the three main lines of direction in research at the Naval Aerospace Medical Institute is not contemplated, although their relative emphasis may shift with changes in dollar support for specific areas. All of our investigations are directly or indirectly concerned with flight personnel and center around (1) their psychological aptitude and professional fitness for flying, (2) their general physical (medical) fitness, and (3) their tolerance for flight stresses. The substantial support we receive from the National Aeronautic and Space Administration is channeled mainly into the last-named area. These investigations deal chiefly with (1) disorientation and other functional disturbances resulting from exposure to unusual force environments, (2) hazards due to ionizing radiation, (3) the effects of very strong magnetic fields and the absence of a magnetic environment, and (4) cardiovascular diseases and disorders.

The recently agreed upon program with the Army not only is being generously funded but also is likely to be continued. Some of these funds will be used to add key investigators to our staff at the Naval Aerospace Medical Institute, which will extend the scope of our basic research work in vision, hearing, respiration and neurological mechanisms involved in alertness and consciousness. All the key investigators at the Naval Aerospace Medical Institute will monitor whatever applied work is being done in their area of competence whether at Pensacola or Fort Rucker. Thus, our overall research effort will be increased in all three major areas. Investigations dealing with psychological criteria for the selection and retention of flight personnel and their validation in terms of psychological aptitude and professional competence will be slightly increased.

With regard to the medical examination and physical standards, exploratory work will be directed towards the possible establishment of a "requirement" for a new medical evaluation program covering the flyer's entire career, based partly on our past experience in the so-called "One Thousand Aviator Project". The possible use of central banks of medical records with terminals in specified locations using computer techniques will be considered. With regard to flight stresses, our studies in *acoustics* and *electroencephalography,* now supported in large part by the Bureau of Naval Weapons, will be slightly increased. Increased attention will be given to the effects of *noise,* prevention and treatment of *motion sickness,* the effects of *high altitude,* the problems incidental to *airdrop* and the pathophysiological correlates of *performance decrement* under simulated and operational stresses. At the present time there are thirty-eight (38) active Bureau of Medicine and Surgery sub-tasks, one (1) of which was transferred from the Bureau of Medicine and Surgery to the Naval Aerospace Medical Institute and two (2) Bureau of Medicine and Surgery Antarctic proposals for which the Naval Aerospace Medical Institute performs the administrative procedures. One (1) joint Army-Navy proposal and one (1) Bureau of Naval Weapons psychiatric proposals are in the Bureau of Medicine and Surgery for approval. Three (3) more proposals are in the process of preparation for submission.

The Research Department has published nine hundred and seventy-three (973) research reports on the various projects, twelve (12) monographs, two hundred and seventeen (217) special reports, five (5) technical reports, and two (2) computer series reports.

There are fifteen (15) outstanding reports to be published.

(AEROMED Ed. Note: Extracted from *Command* History, 1965, submitted by the Commanding Officer, U.S. Naval Aviation Medical Center, Pensacola, Florida, 32512.)

PULMONARY ATELECTASIS BREATHING OXYGEN AT SEA LEVEL AND AT SIMULATED ALTITUDE

Dr. A. B. Dubois, LT T. Turaids MC USN, Dr. F. T. Nobrega and LCDR R. E. Mannen MC USN, Aerospace Crew Equipment Laboratory, U.S. Naval Air Engineering Center, Philadelphia, Pennsylvania.

Although pulmonary atelectasis is not uncommon among jet pilots returning from flights during which they breathe 100 percent oxygen and have been subjected to increased forces of gravitational acceleration, nevertheless during recent tests carried out in altitude chambers, such atelectasis was not found by physical examination, chest x-ray measurement of vital capacity, or determination of arterial blood oxygen tension. The object of this presentation is to describe several episodes of atelectasis characterized by radiographic changes, or decrease of vital capacity occurring during exposure to 100 percent oxygen at sea level or at barometric pressures of 5 psi (27,000 feet) or 7.5 psi (18,000 feet). The subjects who developed vital capacity or radiographic changes were compared with those who did not, using pulmonary function tests to search for predisposing factors. In addition, one of the subjects who twice developed atelectasis was re-exposed to atmospheres containing small amounts of inert gas to determine whether the presence of inert gas would prevent the onset of his atelectasis. (Ed: Methods, results and conclusions are described.)

Seven subjects were exposed to atmospheres of 100 percent oxygen at 5 psi, 72 hours; 7½ psi, 72 hours; or 14.7 psi (sea level); 24 hours. Four of these developed a decrease of vital capacity, and of these four, two had plate-like atelectasis by x-ray. One of these was re-exposed to mixtures of oxygen with 30%, 5% or 2½% N_2 at 5 psi. The first two mixtures prevented the x-ray and vital capacity changes from occurring, whereas the third did not. In this subject, there appeared to be air trapping as indicated by lateral displacement of the airway conductance-lung volume curve. It is concluded that absorptional atelectasis which occurred while breathing oxygen could be prevented in this subject by adding 5 to 30% N_2 to the oxygen.

Compressional atelectasis can be reversed by taking in a deep breath. However, in the present subjects, this maneuver failed, except when 30% or 5% inert gas was in the atmosphere. To explain this failure, one may have to postulate the development of some change which takes place in the complete absence of inert gas.

The implications of this study relevant to selection of space cabin atmospheres are that if the occupants ever develop bronchiolar obstruction, either during a respiratory infection or due to unsuspected pre-existing conditions of the lungs, then episodes of atelectasis may take place. Therefore, the alteration of these atmospheres to include some percentage of inert gas would seem desirable. Meanwhile, selection of personnel for occupancy of 100% oxygen atmospheres probably should exclude those who have a tendency to trap air or oxygen within their lungs. Maximum breathing capacity alone is not a good measure of this. Airway resistance measurements may be of some assistance.

A FLIGHT SURGEON'S LETTER ON COMBAT EYE INJURY

Upon seeing a news photo of an aviator with an eye patch, LT Curtis G. Graham, MC USN, took to his typewriter and wrote the following to U.S. Naval Aviation News:

"For those aviators flying in combat—take heed. There is one obvious question that should be asked after looking at the picture closely. Was this pilot flying with his visor up?

"After spending 7 months in Viet Nam as a Flight Surgeon with HMM–365 recently, I have been impressed with the necessity of continuously encouraging pilots to fly with visors down. After picking plexiglass out of the faces of two of my pilots in a similar situation, it hits even closer to home. I might add that both had their visors down and neither had eye injuries. At the risk of being redundant—the eyes are indispensable, especially to aviators.

"Carrying this point a step further, I have observed that aviation safety emphasis and practices decrease significantly in the combat zone. It is up to the commanding officer, safety officer and Flight Surgeon to see that it never happens or at least only in mild degrees. Perhaps it is primarily a result of the physical strains of fatiguing work load and long hours involved with fulfilling combat commitments. On the other hand, from the mental aspect, factors such as the spacing of R&R's, the total duration of time spent in the combat zone, and the changing moods and attitudes of the whole squadron itself create undercurrents in motivation and functions that are just as important in determining safety consciousness as are physical ones. The preoccupation with the 'Obvious' in those combat situations often obliviates the subtle, yet important, problems of

flight safety. The irony of it all lies in that you never see the tangible results of your efforts—only trends and statistics as a result of the efforts.

"I am proposing much closer scrutiny of slack safety programs which may exist, and a closer liaison between the safety officer and the Flight Surgeon." —AEROMED, BuMed.

ANTHROPOMETRY OF NAVAL AVIATORS—1964

Gifford, E. C.; Provost, J. R.; Lazo, J. Aerospace Crew Equipment Laboratory, U.S. Naval Air Engineering Center, Philadelphia, Pennsylvania.

Naval aviation research and development programs aimed at the evaluation of personnel protective equipment and the design of adequate aircrew station configurations have, in the past, been seriously handicapped by a lack of suitable anthropometric data on naval flying personnel. This situation has become increasingly more apparent in weapon system development programs during recent years. Especially evident was the lack of correspondence between aircrew station dimensions and the requirements for space to adequately accommodate the functioning crew member. During surveys conducted in the fleet in other project areas, many complaints were informally gathered from fleet pilots and other flying personnel concerning the above items.

The desire to correct inadequacies of a limited anthropometric survey conducted during 1957-1958, gave rise to the full-scale survey which forms the subject of this report. A trained anthropometric measuring team visited ten naval and marine corps air stations during 1964 to obtain the data presented. (Ed: The population from which the sample was drawn is defined.)

Body size data for 96 measurements of 1,549 U.S. naval aviators are presented. This represents slightly more than 10 percent of the Naval and Marine Corps aviator population. The techniques of measurement are illustrated by schematic drawings and reference to the literature. Both diametral and surface measurements are included. Dimensions are given in both centimeters and inches. Statistics included are percentiles, means, standard deviations, and coefficients of variation.

It is intended that the data reported herein will be used by designers of aircrew workspaces, as well as by designers of aircrewman personnel protective clothing and equipment. Subsequent reports on this survey will include a detailed breakdown of the measuring equipment and procedures used, correlation coefficients, an analysis of the skinfold data to permit an estimate of the percent of body fat, and sizing programs for use with clothing and equipment.

(Ed. Note: Another aspect of anthropometry is the size coding of Naval Aviators and Aircraft. Required measurements for aviators and other information are contained in BUMED Instruction 6110.8 of 21 Oct 1964.)

U.S. NAVY EJECTION SEAT ALLOCATED TO ANDREWS AIR FORCE BASE

Through cooperation with the USAF, a Navy Ejection Seat Trainer (Device 6EQ2N, T1A aircraft Martin Baker L5A seat) was allocated to Andrews AFB, Washington, D. C. This will make it possible for approximately 170 jet qualified Naval Aviators in the Washington area to obtain their ejection seat training locally. Previously these pilots were required to go to NAS Patuxent River, Maryland or NAS Norfolk, Virginia for refresher training. This action will result in better manpower utilization since travel time to the above listed stations will be eliminated. —AEROMED, BuMed.

SPECIAL NOTICE TO AVIATION PERSONNEL WHO ENGAGE IN SCUBA DIVING

With the abatement of the arctic winds and the melting of the fallen snow of winter close at hand, it is time to project our thoughts to spring and summer recreation activities. The increased use of SCUBA gear in recent years, coupled with the steady rise in air travel by both military and civilian personnel, would necessitate again the timely publication of the U.S. Navy current *policy* concerning flight operations following diving. While this information, primarily intended for pilots and aircrew personnel, usually originates from the Flight Surgeon, wide dissemination of the below safety rule should be given to all personnel.

All personnel who have engaged, either in a recreational or line of duty basis, in scuba, or any other type of diving utilizing underwater breathing apparratus of any type to depths in excess of 30 feet (or who have been exposed to equivalent pressures in excess of this depth in a recompression chamber) should not fly to cabin altitudes in excess of 18,000 feet (or make decompression chamber ascents above this altitude equivalent) within 12 hours following the termination of such a dive or recompression chamber descent.

(Contributed by LT D. E. Furry MSC USN, Chief, Aerospace Physiology Laboratory, Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md. 20014.)

(AEROMED Ed. Note: It is anticipated that this policy will be promulgated in the upcoming revision of OPNAV INST 3740.3; Aviation Physiology Training.)

ADVERSE EFFECTS OF WEIGHT REDUCTION MEDICATION

Many words have been written concerning the dangers of self-medication, and in no other field is the temptation greater than in "self-controlled" dieting. In an August 1965 U.S. Air Force Aircrew Effectiveness Report, the following was reported:

"On 21 June a 47 year old caucasian male lieutenant colonel, command pilot (Code 3) took his annual flying physical examination. He was found to have a Grade II/VI apical systolic ejection murmur which had been unknown to him previously and he was referred to cardiology for evaluation.

"The cardiologist discovered that he had been taking six different medications received from . . . (Ed: non M.D./Flight Surgeon) for weight reduction. His routine EKG was abnormal, suggestive of digitalis effect and obviously different from the last EKG at annual physical examination in 1964.

"The pilot was removed from flying status and he stopped taking the unauthorized medications. Serial EKG's revealed slow return to normal and the cardiologist recommended his return to flying status about one month after the discontinuance of drugs.

"On 23 July 1965, a 37 year old caucasian male major, senior navigator (Code 1) took his routine annual flying physical. He had reported to the Flight Surgeon's Office on two occasions in the 6 weeks prior to this for non-specific complaints of nausea, malaise and loss of appetite. Nothing specific was found on physical examination and no specific treatment was rendered. The major's routine EKG revealed the abnormal findings with generalized ST depression and T wave inversion in Leads II, III, AVF and V3 to V6. These changes were interpreted by the cardiologist as either due to early left ventricular hypertrophy, coronary artery disease or digitalis effect.

"He was immediately placed on nonflying duty status and interviewed further. This led to discovery that he also was taking medications received from the same clinic for weight-reduction with no significant result. Upon discontinuance of this medication he almost immediately noted improvement in his appetite, nausea and fatigue. Over the past four weeks his electrocardiograms have slowly changed and are now essentially normal.

"These two case histories point to a glaring fact. That is, despite repeated warnings by the Flight Surgeons at this Base in the flying safety meetings and through personal contacts concerning the dangers of self-medication or medication under direction of personnel other than the Flight Surgeons, the flying personnel at this Base continue to fail to heed our warnings.

"It has been brought to our attention that many dependents are also taking similar medications, some with significant weight loss. However, a nonflying nurse at this hospital revealed that she had received these medications for one year continuously and had had no significant weight loss. She, too, has an abnormal EKG having had a normal tracing just over a year ago.

"In discussing this problem with the cardiologist it is speculated that digitalis is in these medications. Currently the medications are being analyzed in an attempt to determine the nature of the offending agent.

"Meanwhile the Flight Surgeons here will continue to stress the dangers of self-medication in the flying population with increased emphasis on this type of medication."

(Ed. Note: Subsequent analysis revealed that the tablets contained 0.98 grains USP digitalis each, plus other medication.)

We all have seen adverse effects from other more commonly used diet medications. Nervousness and occasionally psychiatric symptomatology occur. The "crash diet," itself, came under criticism as a possible contributing factor in several aviation accidents and incidents.

It would behoove each Flight Surgeon to reassure himself that the "heavy" aviators in his charge are truly being closely monitored and that all aviators are reminded frequently of the dangers of self or non-Flight Surgeon prescribed medication. Have them clean out their medicine cabinets and bring in the results. We would be interested in learning what turns up.—AEROMED, BuMed.

INTERNATIONAL RECOGNITION TO NAVY CAPTAIN

A Navy medical officer has been voted to membership in the Internaitonal Academy of Aviation and Space Medicine. Major General Count Alfred Cornet d'Elzius de Peissant, Military, Naval and Air

Attache to the Embassy of Belgium, presented a membership certificate to CAPT Joseph P. Pollard MC USN, at a luncheon on 8 February. CAPT Pollard is the Director of the Research Division at the Navy's Bureau of Medicine and Surgery here.

The International Association was formed in 1955 to promote the development of science and to foster research in the realm of biology, aviation and space medicine. It bands together the world's most distinguished leaders in aviation medicine to produce significant and far-reaching results for medicine, for aviation, for astronautics, for science, and for mankind. The legal seat of the Association is in Brussels, Belgium. Membership in the Association is limited to 200. Of the 67 people now listed as members of this international organization, nine are active or retired officers of the U.S. Navy Medical Department.—AEROMED, BuMed.

EDITORIAL DESK

APPLICATIONS FOR RESIDENCY TRAINING

The Professional Advisory Board will meet during July or August 1966 to consider requests for residency training commencing in July 1967. Applications from medical officers desiring consideration should be submitted in accordance with BUMED INSTRUCTION 1520.10C, through proper channels, to arrive in the Bureau prior to 1 July 1966. Applicants for outservice training may contact the institution and obtain tentative acceptance pending final approval by the Professional Advisory Board; however, no firm commitment should be made. Applicants are normally notified of their selection or nonselection within 30 days after the selections have been made.—Training Branch, BuMed.

RESERVE TRAINING FOR MEDICAL ENTOMOLOGISTS

The Armed Forces Pest Control Board will sponsor a Reserve Training Course for medical entomologists from 15 through 26 August 1966. This will be the 7th Annual Course in Military Entomology and will be presented by the Training Branch, Communicable Disease Center, U.S. Public Health Service, Department of Health, Education, and Welfare in Atlanta, Georgia. The maximum number of attendees is 35.

In view of the present situation concerning malaria, and other anthropod-borne diseases in Southeast Asia, the Board feels that the course will be of particular importance this year.

Interested Naval Reserve Medical Entomologists should request this training course as their ACDUTRA. Such requests should be made to their District Commandant and be forwarded via BuMed, Code 7222, for a quota in subject course.—Naval Reserve Division, BuMed.

DIETETIC EDUCATION PROGRAM

Enlisted Navy personnel who have served one year of active duty in any rating who meet the eligibility requirements outlined in BuPers Instruction 1120.38 may apply for the Navy Enlisted Dietetic Education Program (NEDEP). Selected personnel may receive from one to three years full-time duty under instruction in a college or university designated by the Chief, Bureau of Medicine and Surgery. The goal of this program is to provide opportunities for educating a dietitian who has the understanding and skill in the application of the principles of good nutrition and who is motivated for a military career.

Candidates must be high school graduates and have completed a minimum of 32 semester credits or 48 quarter credits of college with a grade average of at least C+. The college work must include: English—9 quarter credits or 6 semester hours, Chemistry—10 quarter credits or 6 semester hours, Mathematics—5 quarter credits or 3 semester hours, Biology—5 quarter credits or 3 semester hours.

Interested applicants who meet the requirements outlined in the above instruction are encouraged to submit their applications for the academic program beginning in September 1967.—MSC Div, BuMed.

NAVY MEDICAL OFFICER RECEIVES BRONZE STAR

U.S. Navy Medical Corps Lieutenant James J. Zelko, has been awarded the Bronze Star Medal for meritorious service while serving with the Second Battalion, Third Marines in Vietnam's Quang Nam Province.

The medal was presented by CAPT Archie C. Kuntze, Commanding Officer of U.S. Navy Headquarters Support Activity, Saigon, during ceremonies held at the Saigon Navy Hospital.

His citation read, in part: "In addition to his regular duties of providing medical care to the personnel of the Battalion, duties which he discharged with exemplary skill, LT Zelko was personally responsible for the noteworthy success of the dispensary that was established in the village of Le My for the treatment of sick and wounded Vietnamese.

"The services rendered by the dispensary's daily operation, both during and after the battle for Le My, constituted a breakthrough in the Battalion's efforts toward the pacification of the entire Le My complex."

LT Zelko treated hundreds of sick and wounded Vietnamese at Le My. His actions are said to have contributed significantly toward the success of the pacification program, the first of its type undertaken by the Marines in the Republic of Vietnam.

LT Zelko recently completed his tour of duty in Vietnam and is now on leave with his family in the United States. He is the son of Mr. and Mrs. Frank Zelko of 925 N. Broadway, Joliet, Illinois.

(By Roland E. Holcomb, JO2 USN, Public Information Office, U.S. Navy Headquarters Support Activity, Saigon, APO San Francisco.)

NEW MEDICARE PLAN SENT TO CONGRESS

DOD's medicare improvement package proposing more liberal benefits for military families has been sent to Congress with officials expected to testify later this month.

Significant retiree benefits are proposed. All retirees would pay about 25 percent of treatment and hospitalization costs as opposed to an earlier proposal basing costs on length of service.

Retirees could choose civilian facilities even in cases where military care is available. DOD, however, would retain the option to specify military care.

Admission to veteran's hospitals would be extended to retirees. They would not be required to sign "inability to pay" statements, nor would admission be limited to service connected disabilities.

Among other proposals is one dealing with care of handicapped dependents. This applies to dependents of active duty personnel, although benefits would extend through the first retirement year.—Commanders Digest 2(21):1, March 12, 1966.

OFFICERS SELECTED FOR PERMANENT REGULAR APPOINTMENT

A Navy augmentation board has selected 227 reserve and temporary officers for permanent regular appointment. Of these, 12 Medical Service Corps Officers and 7 Nurse Corps Officers were selected. They are as follows:

Medical Service Corps

Ashmore, Robert J.	Laclair, B. W.
Baker, D. E.	McIntosh, W. W.
Brown, Seth E.	Price, C. A.
DeVault, R. L.	Schoenmann, D. L.
Johns, J. E.	Smith, Robert D.
Krueger, V. A.	Thompson, James C.

Nurse Corps

Hanes, Wave J.	Sasser, Georglarene
Koester, Helen	Spencer, Peggy R.
Link, Laveta F.	Wallace, L. A.
MacDowell, N. A.	

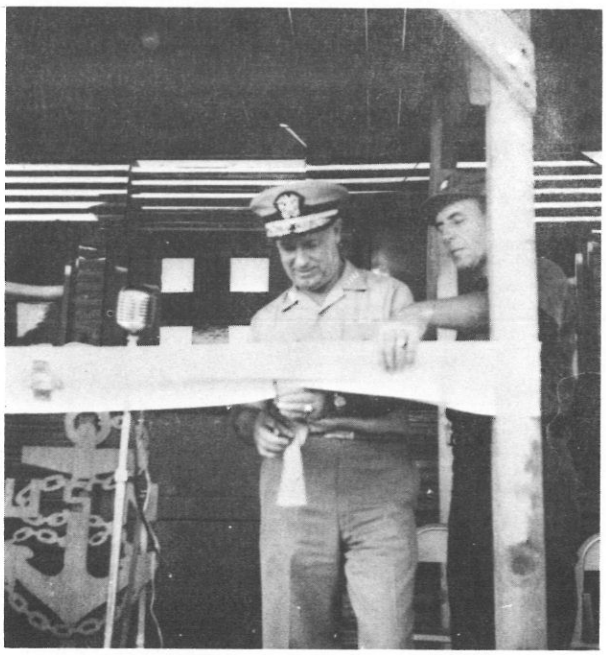
—Navy Times, 2 Mar 1966.

HOSPITAL OPENS IN VIET NAM

"Despite six months of climatologic variations, bridges that have broken down, setbacks as the result of enemy action, and fluctuating shipping and building priorities, the inevitable opening day has arrived. As of 0800 on the tenth day of January, in the Year of Our Lord 1966, the Station Hospital, Naval Support Activity, DaNang, Viet Nam, is open to receive patients."

So wrote CAPT Bruce L. Canaga, Jr. MC USN, Senior Medical Officer, as the initial entry in the official Station Hospital Log at DaNang, Republic of Viet Nam.

CAPT Canaga and LCDR John E. Howard MSC, U.S. Navy, departed the United States in mid-July 1965 as the Advance Hospital Party. At that time it was hoped that the hospital would be operational by 15 October 1965. The months of hopes, frustrations, and hopes born again culminated with the log entry above. The hospital has routinely been admitting, transferring, and discharging patients since that date.



Patients are admitted within an hour, and often within 30 minutes of being wounded. Many are returned to duty who, prior to the opening of the hospital, would have required evacuation out of the country. The availability of nearly immediate hospital care has been responsible for saving countless lives of American military personnel. The present hospital staff consists of 14 Medical Corps Officers; 7 Medical Service Corps Officers and 127 Hospital Corps personnel.

ACKNOWLEDGMENT

Investigation of Potential Hazards of Respiratory Infection in Pure Oxygen Atmospheres in the U.S. Navy Medical News Letter 47(4): 23, 25 Feb 1966 is being conducted jointly by Aerospace Crew Equipment Laboratory and the U.S. Naval Hospital, Philadelphia, Pa.—E. Hendler, PhD, Manager Life Sciences Research Group, ACEL.

EDITOR'S NOTE

Reports of Treatment of Hepatic Coma by Exchange Transfusions (11 cases) by Trey et al and Exchange Transfusion in the Treatment of Fulminating Hepatitis (one case) by Berger et al appear in The New England Journal of Medicine, volume 274, March 3, 1966. Seven of the patients in hepatic coma (acute hepatitis) and the patient in the second report survived. In an editorial in the same issue of The Journal, the editor comments that this is an exciting observation but adds that it does present many problems to the physician faced with the management of this rare but disturbing clinical event. He lists the ways that new forms of treatment usually become established in medicine as: an established need; biochemical or physiologic rational; early trials suggesting the possibility of efficacy; and controlled studies indicating greater efficacy than toxicity. The Editorial ends: "Unfortunately, evaluation of most therapies for relatively rare diseases must end with the conclusion that more experience and data are necessary. The important lesson is that the further information will never be useful unless it is gathered in a systematic and scientific manner. This requires the co-operation of large numbers of clinicians in precise retrospective studies and the design of statistically valid controlled trials employing the technic of randomization whenever it is not known whether the patient who receives the new therapy will, on the average, fare better or worse than the one from whom it is withheld." Better read it.—Editor.

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